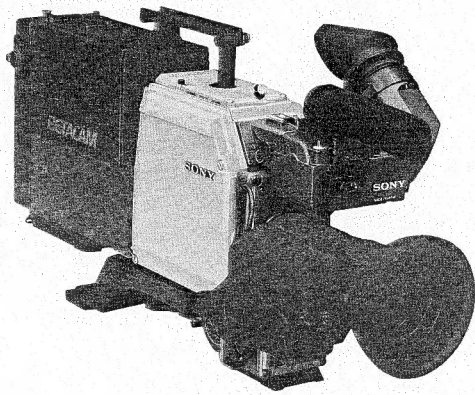


**SONY**<sup>®</sup>

COLOR VIDEO CAMERA

**BVP-30AP**



**BETACAM**<sup>™</sup>

OPERATION AND MAINTENANCE MANUAL

1st Edition (Revised 6)

Serial No. 10001 and Higher

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Components identified by shading and  marked on the schematic diagrams and parts list are critical to safe operation. Replace these components with SONY parts whose part numbers appear as shown in this manual or in supplements published by SONY.

#### **X-RAY RADIATION WARNING**

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

# TABLE OF CONTENTS INHALTSVERZEICHNIS

## 1. OPERATION

1-1.	Features .....	1-1(E)
1-2.	Location and Function of Parts .....	1-2(E)
1-3.	Set Up .....	1-7(E)
1-3-1.	Set Up with the BVV-1PS/BVV-1APS/ BVV-5PS VTR .....	1-7(E)
1-3-2.	Lens Attachment .....	1-9(E)
1-3-3.	Tripod Attachment .....	1-10(E)
1-3-4.	Shoulder Strap Attachment .....	1-11(E)
1-3-5.	External Microphone Attachment .....	1-12(E)
1-4.	Power Sources .....	1-13(E)
1-5.	Connections .....	1-14(E)
1-6.	Adjustments .....	1-15(E)
1-6-1.	White Balance and Black Balance Adjustments .....	1-15(E)
1-6-2.	Black Set Adjustment .....	1-16(E)
1-6-3.	Centering Adjustment .....	1-17(E)
1-6-4.	Viewfinder Adjustment .....	1-18(E)
1-6-5.	Brace Adjustment .....	1-18(E)
1-7.	Operation Checks .....	1-19(E)
1-8.	Operation .....	1-20(E)
1-8-1.	Preparation .....	1-20(E)
1-8-2.	Camera Recording .....	1-21(E)
1-9.	Precautions .....	1-22(E)
1-10.	Specifications .....	1-23(E)
1-11.	Packing of the BVP-30AP .....	1-24(E)
1-12.	How to Operate the Betacam System BVW-30AP .....	1-25(E)
1-12-1.	Features .....	1-25(E)
1-12-2.	Components of the BVW-30AP .....	1-27(E)
1-12-3.	Check Routines .....	1-28(E)
1-12-4.	Operation .....	1-32(E)
1-12-5.	Warning System .....	1-35(E)
1-12-6.	How to Use the Carrying Case .....	1-37(E)
1-12-7.	Attaching the Rain Cover .....	1-38(E)
1-12-8.	Packing of the BVW-30AP .....	1-39

## 1. BETRIEB

1-1.	Besondere Merkmale .....	1-1(G)
1-2.	Lage und Funktion der Teile .....	1-2(G)
1-3.	Zusammenbau .....	1-7(G)
1-3-1.	Zusammenschluß mit Videorecorder BVV-1PS/BVV-1APS/BVV-5PS .....	1-7(G)
1-3-2.	Anbringung des Objektivs .....	1-9(G)
1-3-3.	Anbringung eines Statives .....	1-10(G)
1-3-4.	Anbringung des Schulterriemens .....	1-11(G)
1-3-5.	Anbringung eines Außenmikrofons .....	1-12(G)
1-4.	Stromversorgung .....	1-13(G)
1-5.	Anschlüsse .....	1-14(G)
1-6.	Einstellungen .....	1-15(G)
1-6-1.	Weiß- und Schwarzabgleich .....	1-15(G)
1-6-2.	Schwarzeinstellung .....	1-16(G)
1-6-3.	Zentrierung .....	1-17(G)
1-6-4.	Suchereinstellungen .....	1-18(G)
1-6-5.	Ausrichten der Stütze .....	1-18(G)
1-7.	Funktionskontrollen .....	1-19(G)
1-8.	Betrieb .....	1-20(G)
1-8-1.	Vorbereitung .....	1-20(G)
1-8-2.	Kameraaufnahme .....	1-21(G)
1-9.	Vorsichtsmaßnahmen .....	1-22(G)
1-10.	Technische Daten .....	1-23(G)
1-11.	Verpacken der BVP-30AP .....	1-24(G)
1-12.	Bedienung des Betacam-Systems BVW-30AP .....	1-25(G)
1-12-1.	Merkmale .....	1-25(G)
1-12-2.	Bestandteile des BVW-30AP .....	1-27(G)
1-12-3.	Kontrollroutinen .....	1-28(G)
1-12-4.	Bedienung .....	1-32(G)
1-12-5.	Warnsystem .....	1-35(G)
1-12-6.	Verwendung des Tragekoffers .....	1-37(G)
1-12-7.	Anbringung des Regenschutzes .....	1-38(G)
1-12-8.	Verpacken des BVW-30AP .....	1-39

## **2. TECHNICAL INFORMATION**

- 2-1. CIRCUIT DESCRIPTION ..... 2-1
- 2-2. FUNCTION OF CONTROLS ..... 2-2
- 2-3. CONNECTOR'S PIN FUNCTION ..... 2-7
- 2-4. SYSTEM EXPANSION ..... 2-9

## **3. SERVICE INFORMATION**

- 3-1. BOARD ARRANGEMENT ..... 3-1
- 3-2. NOTES ON BOARD REPLACEMENT .... 3-2
- 3-3. REPLACEMENT OF CAMERA TUBE ..... 3-3
- 3-4. REPLACEMENT OF SHUTTER ..... 3-6
- 3-5. REPLACEMENT OF CRT ..... 3-8
- 3-6. PRECAUTIONS ON REPLACEMENT OF  
VTR CONNECTOR  
(50-PIN CONNECTOR) ..... 3-9
- 3-7. REPLACEMENT OF CHIP PARTS ..... 3-10

## **4. ALIGNMENT**

- 4-1. PREPARATION ..... 4-1
- 4-2. ESSENTIAL ADJUSTMENT ..... 4-5
  - POWER SUPPLY SYSTEM ..... 4-5
  - SYNC GENERATOR SYSTEM ..... 4-6
  - REGISTRATION SYSTEM ..... 4-7
- 4-3. VIDEO SIGNAL SYSTEM ..... 4-26
  - IE-6P BOARD ADJUSTMENT ..... 4-49
  - AUTO IRIS ADJUSTMENT ..... 4-53
  - VIEWFINDER SYSTEM ..... 4-55
- 4-4. PROCEDURE OF PARTIAL ADJUSTMENT... 4-59

## **5. DIAGRAM**

- 5-1. BLOCK DIAGRAM ..... 5-1
  - OVERALL ..... 5-1
  - VA-23 Board ..... 5-4
  - SH-8A Board ..... 5-6
  - PR-75 Board ..... 5-7
  - IE-6P Board ..... 5-10
  - EN-33A Board ..... 5-11
  - AT-16 Board ..... 5-13
  - DF-23 Board ..... 5-15
  - SG-63A Board ..... 5-17
  - PS-41 Board ..... 5-19
  - VIEWFINDER ..... 5-20
- 5-2. MOUNTING DIAGRAM AND SCHEMATIC  
DIAGRAM ..... 5-21
  - LOCATION OF MOUNTED CIRCUIT
  - BOARD ..... 5-21
  - PA-37 Board ..... 5-22
  - VA-23 Board ..... 5-26
  - DF-23 Board ..... 5-30
  - IE-6P Board ..... 5-34
  - PR-75 Board ..... 5-38
  - EN-33A Board ..... 5-42
  - SH-8A Board ..... 5-46
  - AT-16 Board ..... 5-50
  - SG-63A Board ..... 5-54
  - PS-41 Board ..... 5-58
  - VIEWFINDER ..... 5-61
  - CN-8, 9, 65 Board  
HN-30B, HP-14 Board  
SW-77, 78, 79, 207 Board } ..... 5-66
  - FRAME ..... 5-69
- 5-3. SEMICONDUCTORS ..... 5-75

## **6. SPARE PARTS LIST**

- 6-1. PARTS INFORMATION ..... 6-1
- 6-2. ELECTRICAL PARTS ..... 6-2
- 6-3. EXPLODED VIEW ..... 6-30
- 6-4. PACKING MATERIAL AND ACCESSORY ... 6-41
- 6-5. FIXTURE ..... 6-43



## SECTION 1

### OPERATION

The BVP-30AP is a compact and lightweight color video camera with a three-pickup tube system employing 2/3-inch Magnetic focus-Static deflection Plumbicon\* tubes. When the BVP-30AP is used together with a BVV-1PS/BVV-1APS portable video cassette recorder, a Betacam system BVW-30AP for ENG (Electronic News Gathering) is created, making it possible for camera recording to be done by a single person.

\* PLUMBICON is a registered trademark of N.V. PHILIPS.

#### 1-1. FEATURES

##### High quality picture

The Magnetic focus-Static deflection tubes have the following features and assure a high quality picture.

- The high resolution can be obtained at any portion on the screen.
- The deflection distortion is low and the precise registration is possible.
- The diode-gun plumbicon ® tubes and the high-voltage operation assure the clear picture.
- The signal is output through the connector pins and the first-stage FET is built-in the coil for the high signal-to-noise ratio.

##### Compact and lightweight

The magnesium diecast body is light and rigid. The compact design and lightweight makes the BVP-30AP easy-to-operate camera.

##### High sensitivity

The video output level can be raised by 9 dB or 18 dB. Even at the 18 dB position, a high quality picture is assured so that the recording under low light conditions will be possible.

##### Automatic white balance and black balance/preset white balance

The white balance and black balance can be automatically adjusted at each filter position, and the adjusted value is stored in the memory even when the power is turned off. When the WHITE BAL switch is set to PRESET, a white balance at 3200°K is obtained.

##### Automatic centering adjustment

Thanks to the newly developed automatic centering adjusting circuit, the centering can be easily adjusted without using the centering pattern. The adjusted value is stored in the memory even when the power is turned off.

##### Automatic beam-optimizer

An automatic beam-optimizer allows the camera to accept excessive light input of up to 8 times that of normal conditions without comet tail or blooming effects.

##### Dynamic beam focus

Use of a dynamic beam focus circuit has improved the resolution around the screen.

##### Wide dynamic range

The BVP-30AP has realized wide dynamic range to accept excessive light input of up to 6 times that of normal condition with the incorporated DCC (Dynamic Contrast Control) circuit.

##### Warning system

If there is a problem on the VTR or the tape or the battery is to end, the warning lamps in the viewfinder indicate it. When the BVP-30AP is used together with the BVV-1PS/BVV-1APS, the warning sound is heard and the tape remaining time indicators in the viewfinder will function.

##### Auto-close mechanism

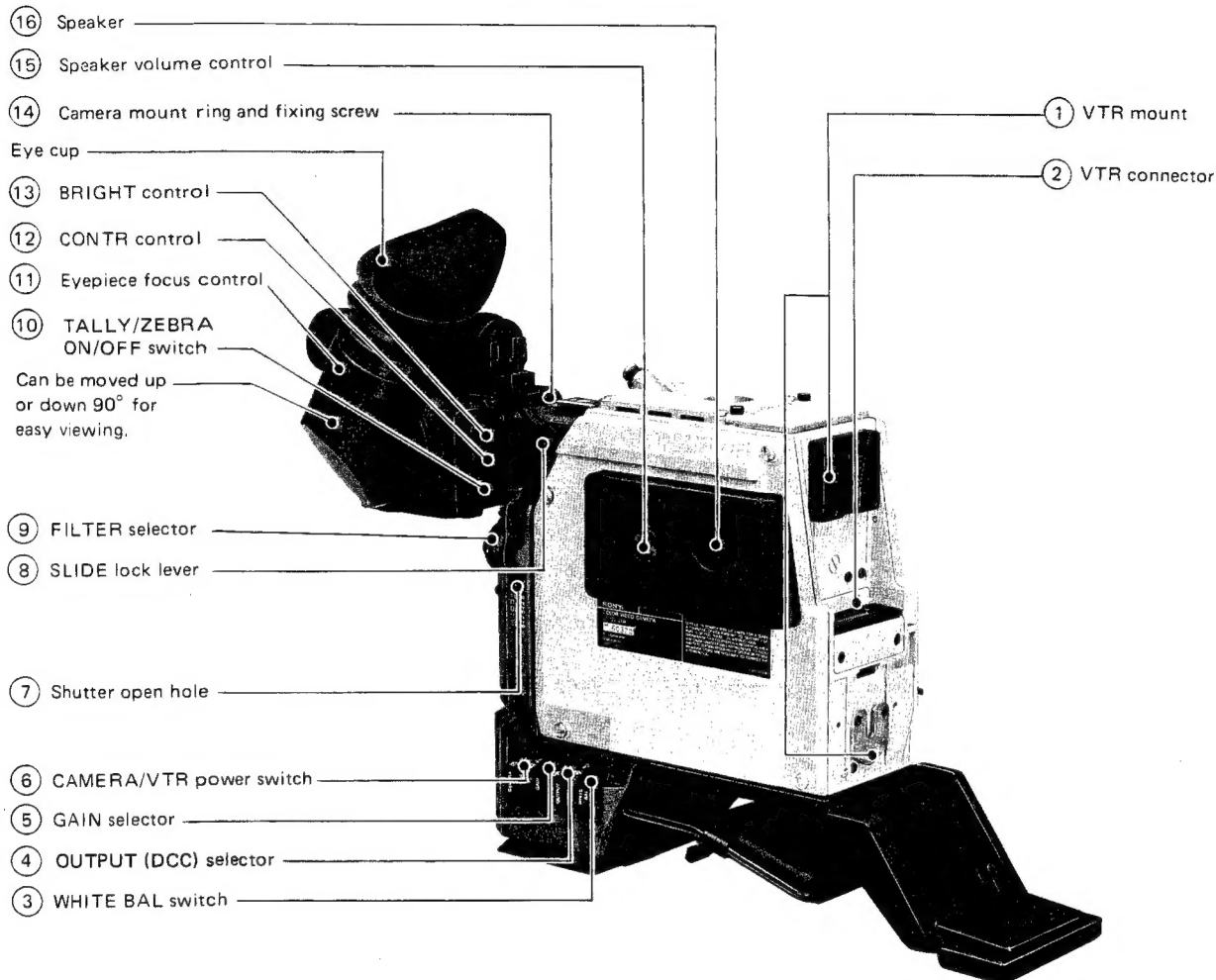
The shutter is automatically closed to protect the pickup tube in the following cases.

- When the CAMERA/VTR switch is set to PREHEAT
- When the OUTPUT switch is set to BARS
- While the automatic black balance adjustment is being performed
- When the test signal is output
- While the tape is being rewound

In addition to the above, the BVP-30AP has the following features.

- Low power consumption
- Colour framing pulse output when the camera is operating with the internal sync system.
- Gen lock function when the CA-3 or CA-30P camera adaptor is used
- 2 line image enhancer
- Shading compensator to use the lens extender
- Masking circuit
- Split color bar generator
- Sharp-directional microphone
- Automatic iris adjustment mechanism
- Video level indicator
- Adjusting the audio recording level of audio channel 1
- Zebra pattern ON/OFF switch
- Built-in monitor speaker
- Attaching an external microphone
- High resolution viewfinder

## 1-2. LOCATION AND FUNCTION OF PARTS



### ① VTR mount

Mount a BVV-1PS/BVV-1APS portable videocassette recorder, CA-3 or CA-30P camera adaptor, etc.

### ② VTR connector (50 pin)

Connect the 50-pin connector of the BVV-1PS/BVV-1APS videocassette recorder, CA-3 or CA-30P camera adaptor, etc.

### ③ WHITE BAL (balance) switch

**PRESET:** The white balance is set at the factory to the value of 3200°K with the FILTER selector ⑨ set to "1", the white balance of the iodine lamp. Use this position when you have no time to adjust the white balance.

**AUTO:** Generally set to this position. When the AUTO W/B BAL switch ②⑤ is set to WHT, the white balance will automatically adjusted and memorized. After the adjustment, the memorized white balance value is always obtained at this position.

### ④ OUTPUT (DCC) selector

Selects the signal output from the VTR connector ②, or TEST OUT connector ②② and to the viewfinder.

**CAM:** Signal picked up by the camera.

At the DCC ON position, the built-in DCC circuit functions.

When the DCC circuit is not used, set the selector to DCC OFF.

**BARS (DCC OFF):** Color bar signal. Set at this position to use the color bars to adjust the video monitor or to record the color bars.

### ⑤ GAIN selector

Generally set this selector to "0". When the selector is set to "9" or "18", the video output level will be raised by 9 dB or 18 dB respectively.

### ⑥ CAMERA/VTR power switch

Turns on and off the power to the camera and the videocassette recorder.

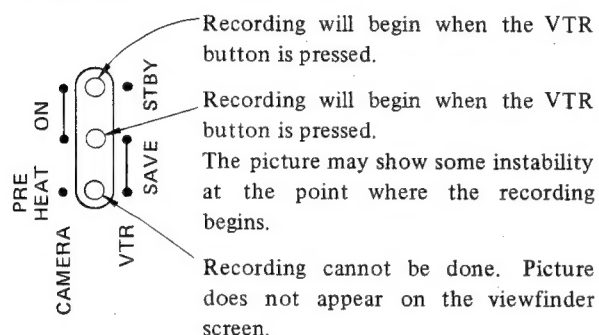
**CAMERA-PREHEAT:** Power is supplied to the pickup tube and the heater of the picture tube in the viewfinder but the picture does not appear on the viewfinder screen.

The power consumption is reduced at this position.

**CAMERA-ON:** The power is supplied to all part of the camera and the picture appears on the viewfinder screen.

**VTR-SAVE:** The head drum stops rotating and the tape is unthreaded. Because the power consumption is reduced at this position, the recording time will be longer.

**VTR-STBY:** The head drum starts rotating and the tape is threaded around the drum head.



#### ⑦ Shutter open hole

This hole is equipped to force the shutter to open by breaking it when the shutter does not open in normal operation. If the shutter does not open during operating the camera, check that the power supply circuit works correctly and that the connections are correct. If the shutter still does not open after checking the above items, remove the rubber cap and push in a thin stick like a thin screwdriver, and the shutter will open.

After opening the shutter with this method, be sure to contact your Sony personnel.

#### ⑧ SLIDE lock level

Turn the lever clockwise and the viewfinder is locked. Turn the lever counterclockwise to release the lock and the viewfinder can be moved horizontally to be adjusted the position for easy-viewing.

#### ⑨ FILTER selector

Select the appropriate filter according to the lighting conditions.

Filter number	Color temperature	Lighting conditions
1	3200°K	sunrise, sunset, in a studio
2	5600°K + 1/4 ND*	bright outdoors
3	5600°K	cloudy or rainy outdoors
4	5600°K + 1/16 ND*	clear and bright scenery of snow, high mountains or seaside

\* ND: neutral density filter

#### ⑩ TALLY/ZEBRA ON/OFF switch

**ZEBRA TALLY:** The zebra pattern and tally lamp are turned on.

**OFF:** The zebra pattern and tally lamp are turned off.

**ZEBRA:** The zebra pattern is turned on, and the tally lamp is turned off.

#### ⑪ Eyepiece focus control

Adjust this control so that the clearest picture can be obtained on the viewfinder screen.

- This control does not affect the output signal of the camera.

#### ⑫ CONTR (contrast) control

Adjusts the contrast of the picture on the viewfinder screen.

- This control does not affect the output signal of the camera.

#### ⑬ BRIGHT (brightness) control

Adjusts the brightness of the viewfinder screen. To obtain a brighter picture, turn this control clockwise.

- This control does not affect the output signal of the camera.

#### ⑭ Camera mount ring and fixing screw

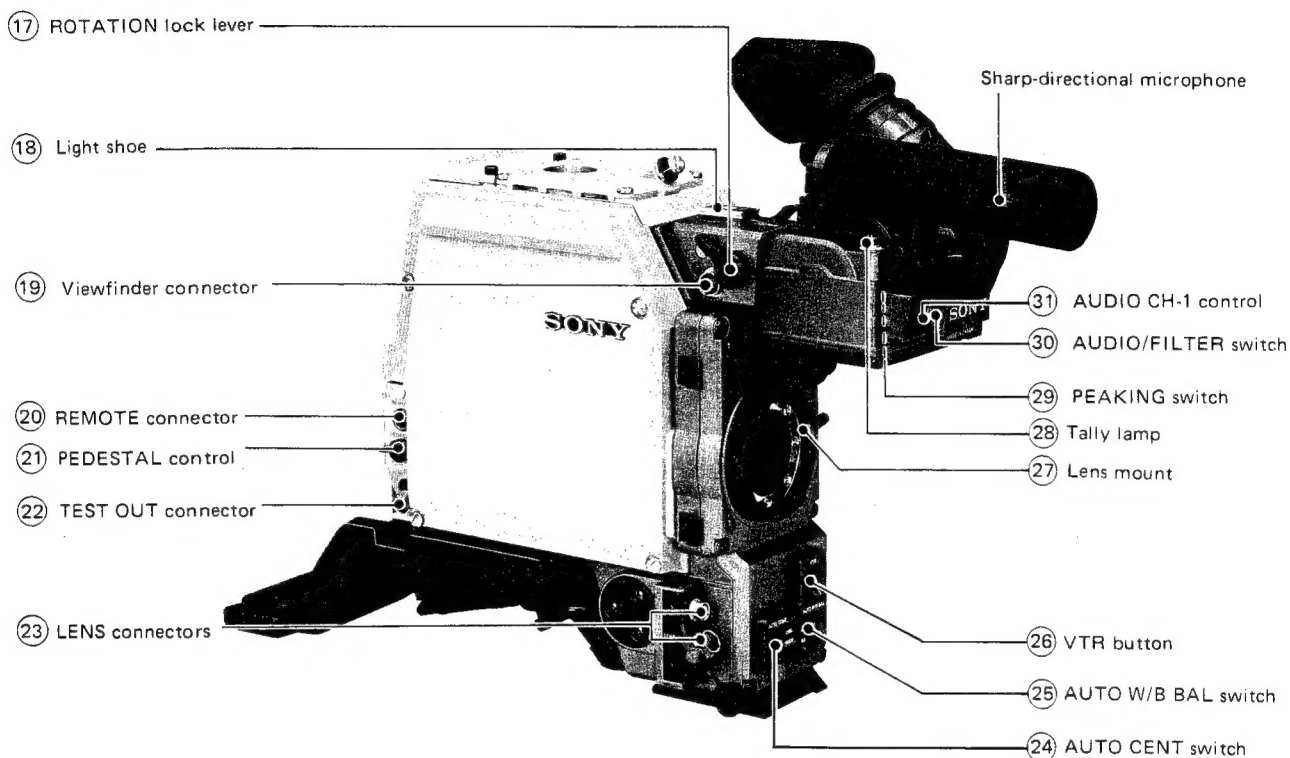
Generally do not remove the viewfinder from the camera. If it is unavoidable to remove the viewfinder, loosen the fixing screw and turn the mount ring clockwise from the lens side, and pull the viewfinder. To mount the viewfinder again, turn the mount ring counterclockwise and be sure to fasten it with the fixing screw securely.

#### ⑮ Speaker volume control

Adjusts the sound level from the speaker. Turning the control to clockwise increases the sound volume. At the fully counterclockwise position, no sound can be heard.

#### ⑯ Speaker

During recording, simultaneous playback sound (mixed sound of the audio channels 1 and 2) can be monitored. In other mode, the E-to-E sound selected on the VTR can be heard. The sound corresponding to the warning lamps is also heard.



**①⑦ ROTATION lock lever**

Turn the lever down to lock the viewfinder. Turn the lever counter-clockwise to release the lock, and the viewfinder can be rotated.

**①⑧ Light shoe**

Attach a video light, etc.

**①⑨ Viewfinder connector (12 pin)**

Connect a BVF-50 viewfinder.

- When a viewfinder is connected to this connector, be sure to remove the supplied 1.5-inch viewfinder from the camera. Do not connect two viewfinders simultaneously.

**②⑩ REMOTE connector (6 pin)**

Connect the appropriate equipment to remotely control the fine adjustment of the iris, pedestal level and gain.

**②① PEDESTAL level control**

Adjusts the pedestal level.

**②② TEST OUT connector (BNC type)**

The following signals selected by the ENC/REG switch on the built-in circuit board will be output.

**REG:** R, G, B, R-G or B-G test signal selected by the R/OFF/B and the G/OFF/-G switches is output.

**ENC:** Encoded video signal is output. Usually use this position.

**②③ LENS connectors (6 pin, 12 pin)**

Connect a cable of the lens to the appropriate connector, 6 pin or 12 pin.

For details on the usable lenses, consult your Sony personnel.

②4 **AUTO CENT** (automatic centering adjustment) switch  
**PRESET:** Use this position when the memorized centering value is not used.

**MEMORY:** Use this position when the memorized centering value is used after the automatic centering adjustment.

**START:** For automatic centering adjustment, point the camera to an appropriate object and set this switch to START. The switch automatically returns to the center position when the switch is released.

②5 **AUTO W/B BAL** (automatic white/black balance adjustment) switch

**WHT:** For automatic white balance adjustment, set the WHITE BAL switch ③ to AUTO and set this switch to WHT. The adjusted value will be automatically memorized.

**BLK:** For automatic black balance and black set level adjustment, set this switch to BLK. The adjusted value will be automatically memorized.

- The switch automatically returns to the center position when it is released after setting the switch to WHT or BLK.

②6 **VTR button**

Press to start recording. To stop, press this button again. This button functions the same as the VTR button on the lens. To use this button, remove the cover.

②7 **Lens mount (special bayonet type)**

Attach the lens.

②8 **Tally lamp**

This lamp lights or blinks when the REC lamp on the viewfinder lights or blinks.

②9 **PEAKING switch**

The outline of the picture on the viewfinder is enhanced so that the focus can easily be adjusted. Every time the switch is pressed, the function is turned on and off alternately.

③0 **AUDIO/FILTER switch\***

**AUDIO:** Use this position when the recording level of audio channel 1 is adjusted by the AUDIO CH-1 control. The FILTER/AUDIO indicator in the viewfinder shows the audio recording level.

**FILTER:** The FILTER/AUDIO indicator in the viewfinder shows the number of the filter selected by the FILTER selector. When the camera is used together with the machine except for the BVV-1PS with the serial No. 50000 or higher or BVV-1APS, be sure to set the switch to this position.

③1 **AUDIO CH-1 (audio channel-1 recording level) control\***

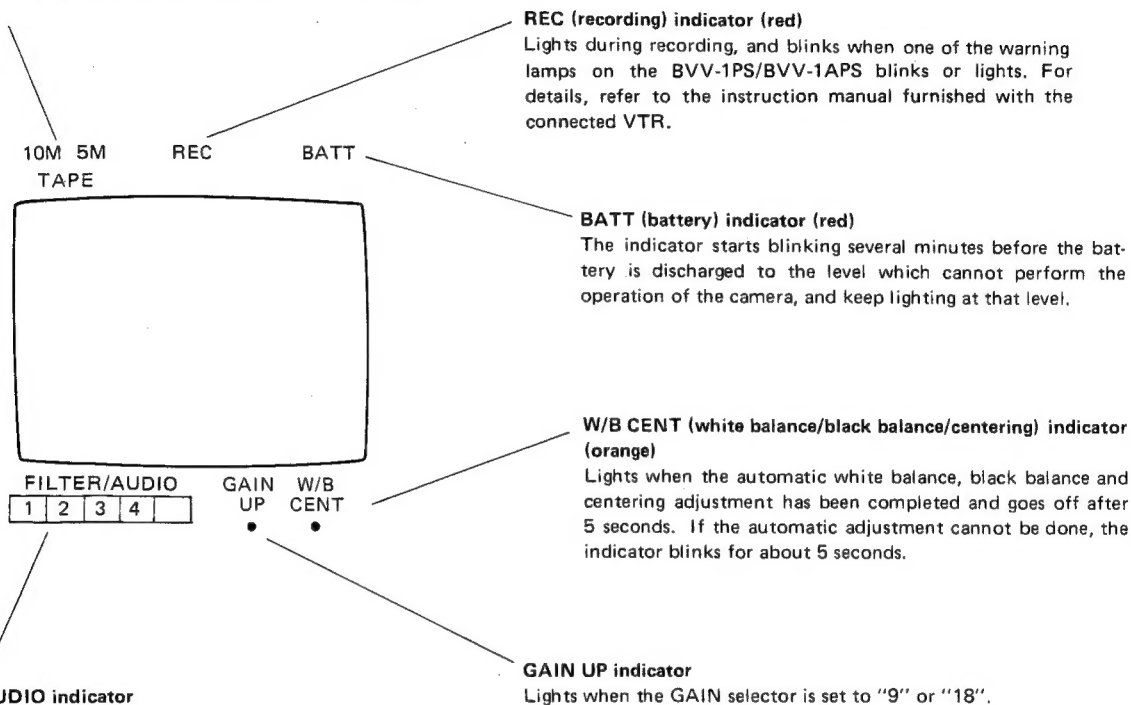
When the AUDIO CH-1 MANU/AUTO selector on the BVV-1PS/BVV-1APS is set to MANU and the AUDIO/FILTER switch ③0 is set to AUDIO, the recording level of audio channel-1 can be adjusted manually. Adjust the level during observing the FILTER/AUDIO indicator in the viewfinder.

- \* These switch and control are effective only when the BVP-30AP is used together with the BVV-1PS with the serial No. 50000 or higher or with the BVV-1APS.

## Indicators in the viewfinder

### Tape remaining time indicators

Show in minutes the amount of tape remaining for recording. These indicators function only when the BVP-30AP and the BVV-1PS/BVV-1APS are directly connected with the 50-pin connectors.




### FILTER/AUDIO indicator

When the AUDIO/FILTER switch is set to AUDIO, the audio level is indicated. When the switch is set to FILTER, the number of the filter selected by the FILTER selector lights.

### Tape remaining time indicators and the remaining time

These indicators function only when the BVP-30AP and the BVV-1PS/BVV-1APS are directly connected with the 50-pin connectors.

Remaining time (minutes)	20	15	10	5	2	0
Indicators	10M 5M	10M	5M	5M		
REC indicator	REC					REC*

 : Blinks in 1 Hz interval  
\* : Blinks in 4 Hz interval

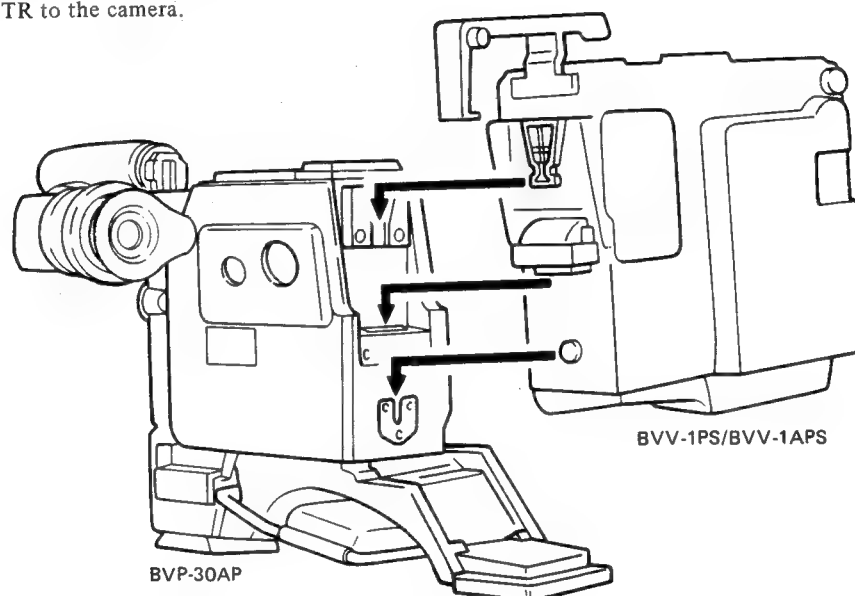
## 1-3. SET-UP

### 1-3-1. Set up with the BVV-1PS/BVV-1APS/BVV-5PS VTR

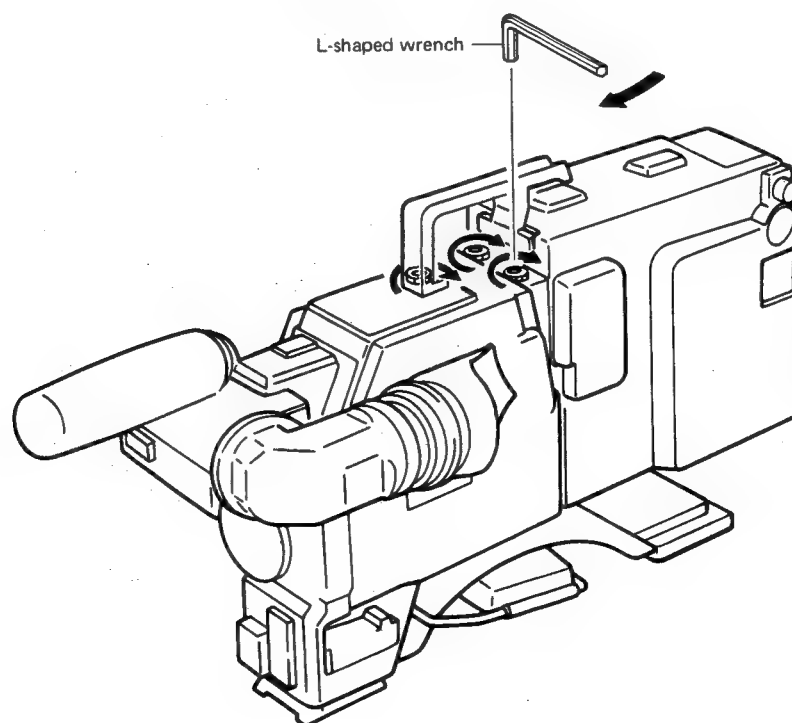
The following shows an example of how to set up the BVP-30AP and the BVV-1PS/BVV-1APS/BVV-5PS portable videocassette recorder. To set up the BVP-30AP with another unit, refer to the instruction manual furnished with each unit.

#### For the BVV-1PS/BVV-1APS VTR

1. Attach the VTR to the camera.

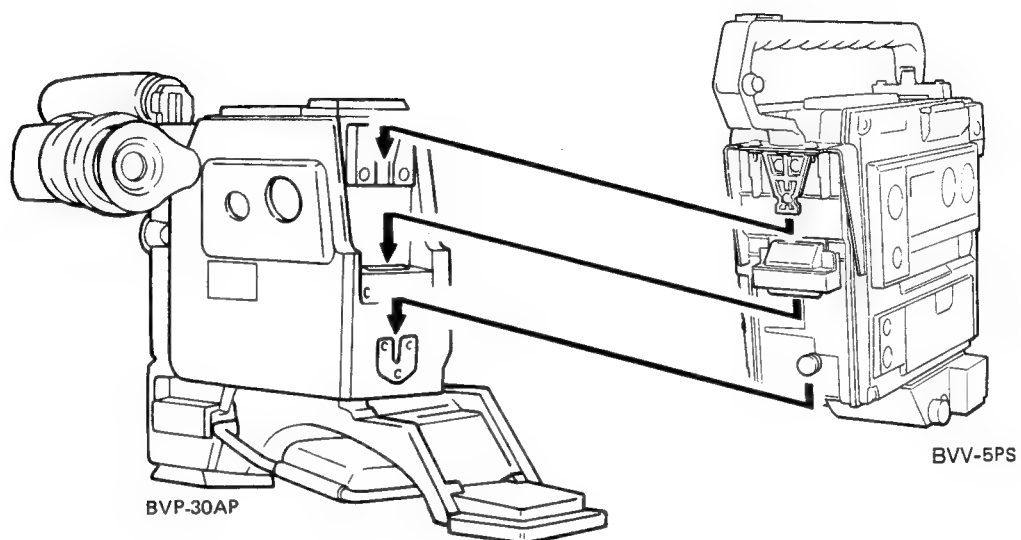


2. Tighten the screws (supplied with the VTR) securely.

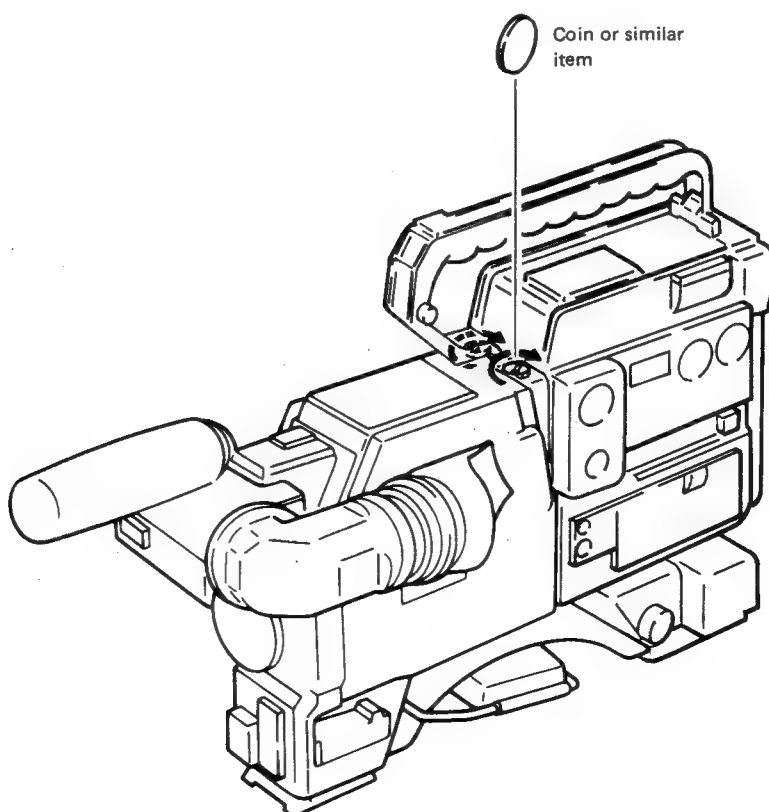


**For the BVV-5PS VTR**

1. Attach the VTR to the camera.



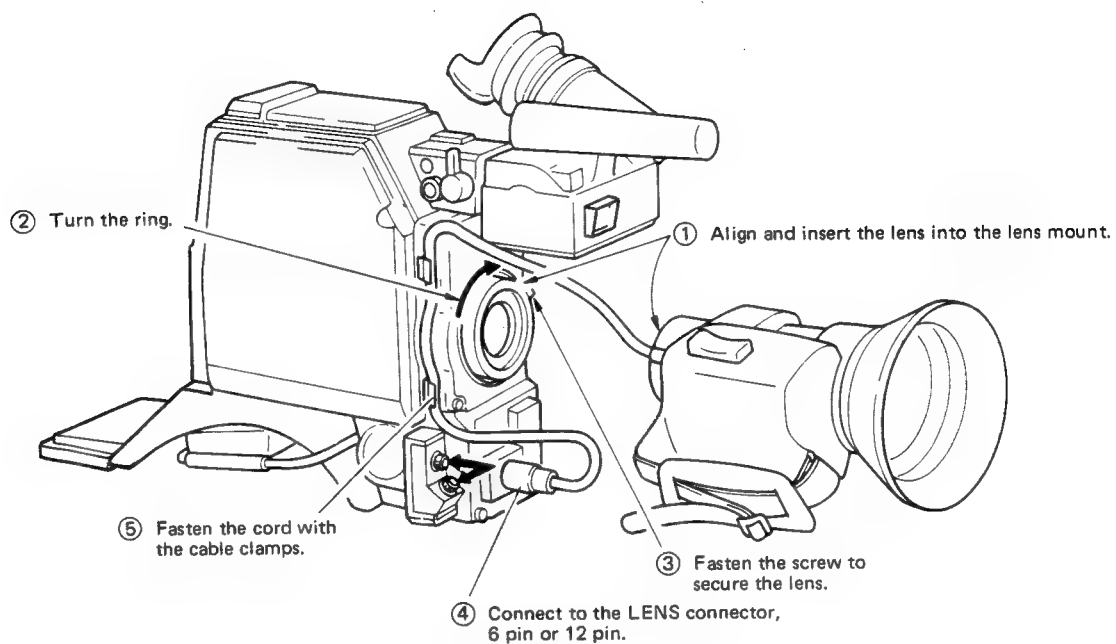
2. Tighten the screws (supplied with the VTR) securely.



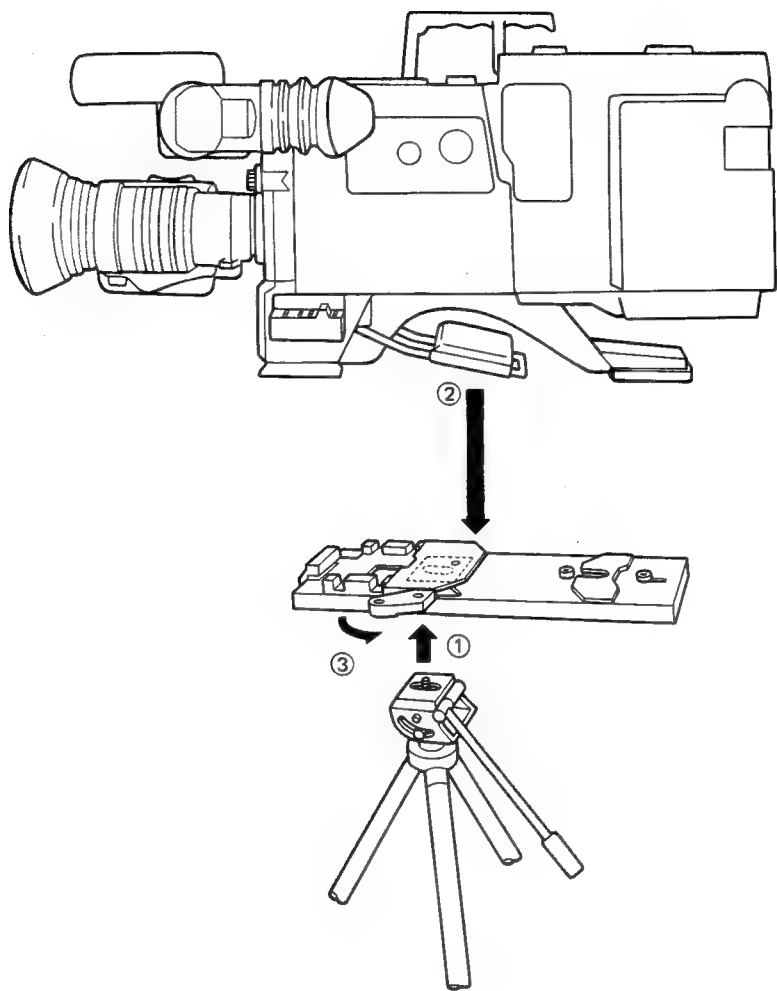


### 1-3-2. Lens Attachment

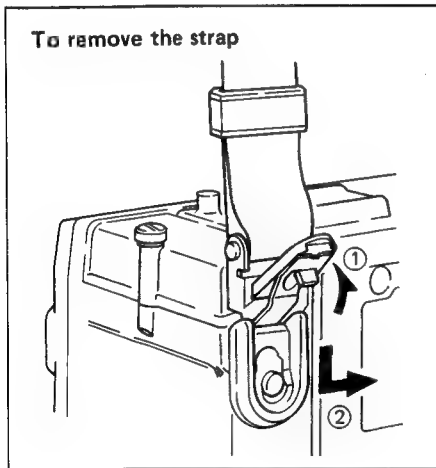
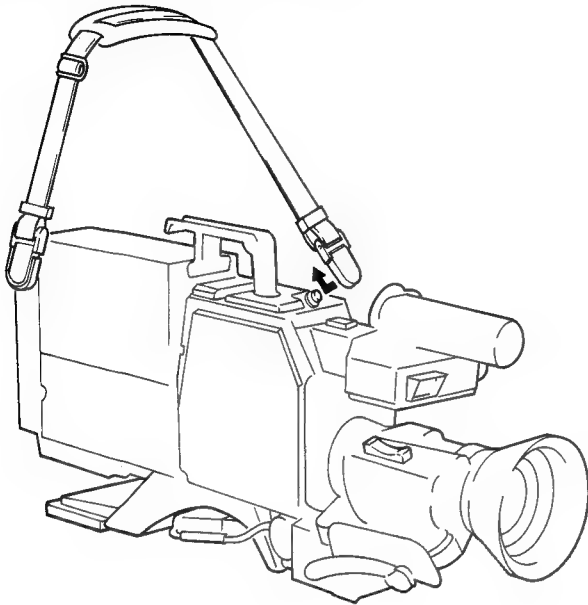
- For the details on the lens, refer to the instruction manual furnished with the lens.



1-3-3. Tripod Attachment



#### 1-3-4. Shoulder Strap Attachment

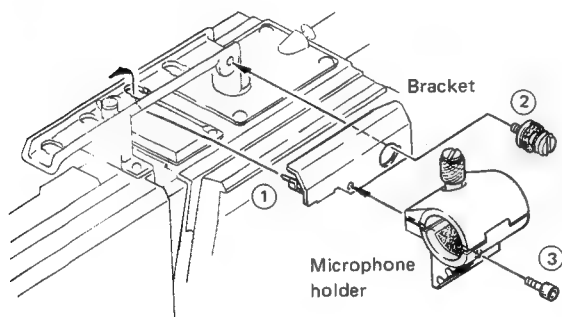


### 1-3-5. External Microphone Attachment

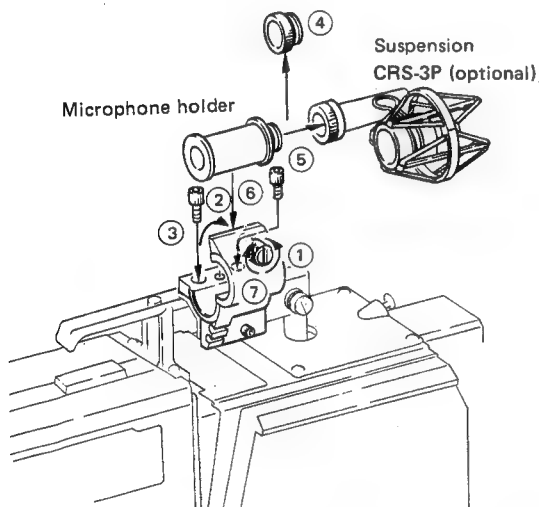
#### When a suspension is used

When a BVP-30AP is used with the BVV-1PS/BVV-1APS as a BVW-30AP, attach the microphone to the camera by using a suspension, and the vibration noise of the VTR can be avoided.

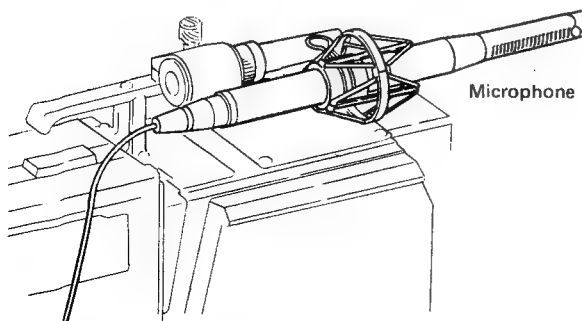
1. Attach a bracket and a microphone holder to the handle.



2. Fix the microphone holder, clamp the suspension with the microphone holder, and fasten the screw.



3. Install the microphone to the suspension.

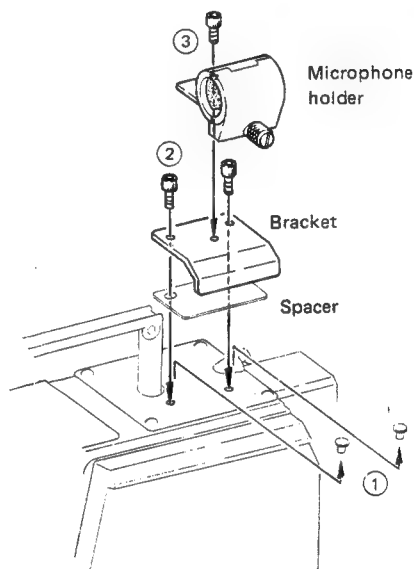


4. Connect the microphone cable to the MIC IN connector on the VTR.

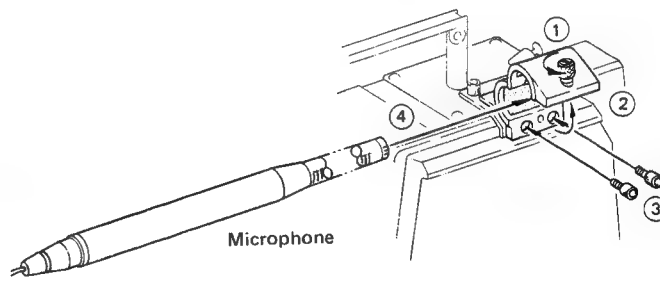
#### When a suspension is not used

If the suspension is not used, the recording sound is affected by the vibration noise of the VTR. When the camera is used with the BVV-1PS/BVV-1APS, avoid this method. When the CA-3 or CA-30P is used with the BVP-30AP, this method is recommended.

1. Remove the caps on the camera, and attach a bracket and a microphone holder to the camera.



2. Fix the microphone holder, clamp the microphone with the microphone holder, and fasten the screw. If the diameter of the attached microphone is small, attach the supplied adaptor to the microphone, and clamp it.

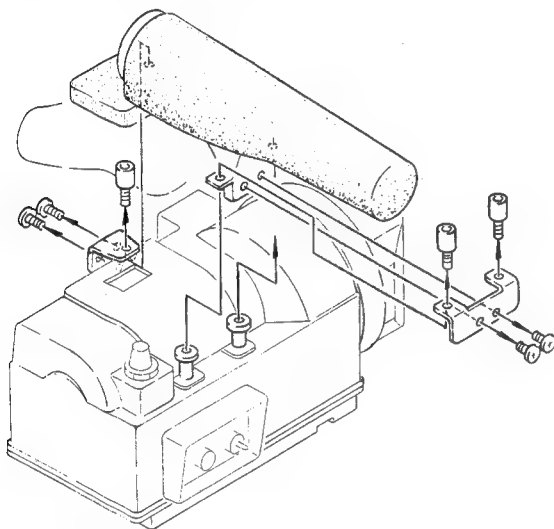


3. Connect the microphone cable to the MIC IN connector on the camera adaptor.

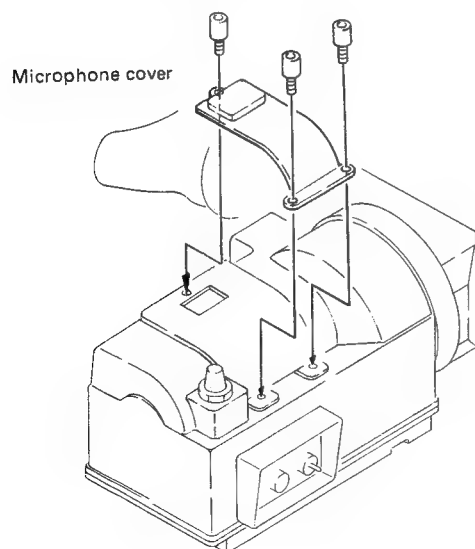
**To remove the built-in microphone**

When an external microphone is connected, the signal from the built-in microphone is automatically cut off. The built-in microphone can be removed with the following method, and if it is removed, attach the microphone cover supplied.

1. Remove the built-in microphone and the connector.



2. Attach the microphone cover.

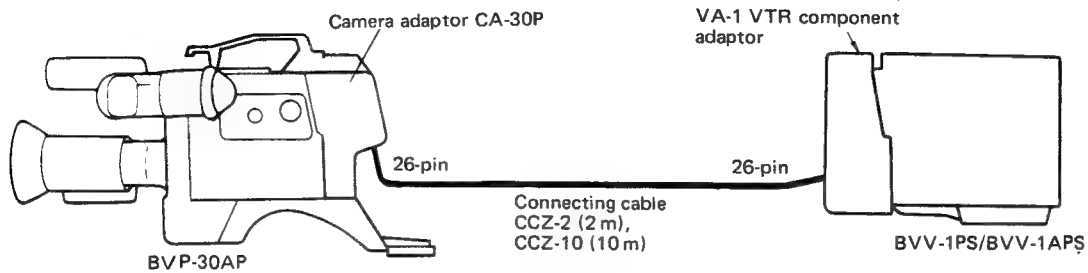
**1-4. POWER SOURCES**

The power is supplied from the unit connected to the 50-pin connector on the BVP-30AP. Please refer to the instruction manual furnished with the unit connected to the 50-pin connector.

## 1-5. CONNECTIONS

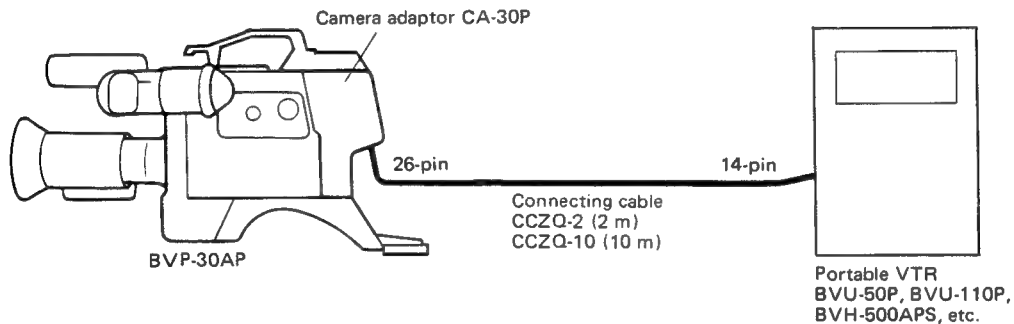
The BVP-30AP can be used as follows besides being directly connected to the BVV-1PS/BVV-1APS with the 50-pin connectors.

### Connection with the BVV-1PS/BVV-1APS by using the connecting cable



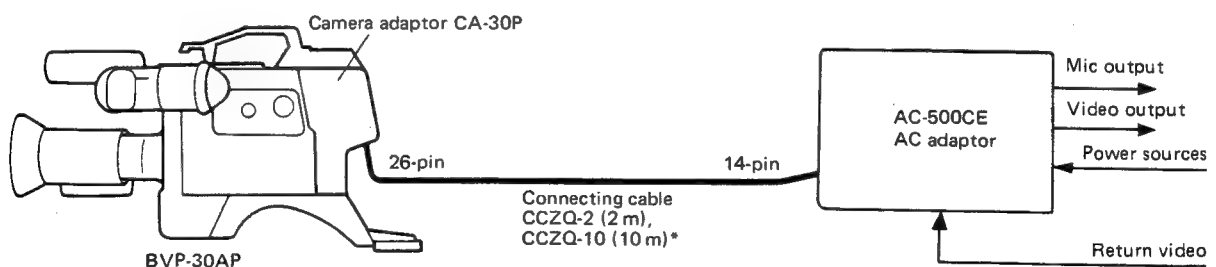
- The VA-1VP VTR composite/component adaptor can be connected in the same way.

### Connection with a conventional portable VTR



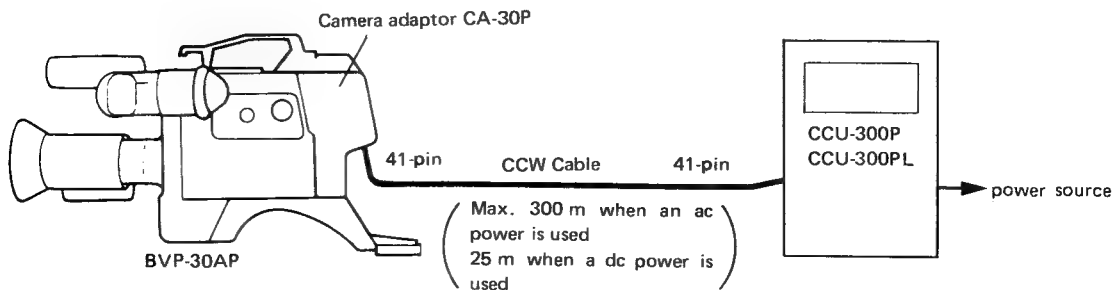
- When the power is supplied from the VTR by using a camera cable of 10 meters long, the picture quality after the BATT indicator in the viewfinder starts blinking is not guaranteed.

### Connection with the AC-500CE



- \* To supply only the power to the camera, connect the CA-30P and the AC-500CE with a 4-pin cable.
- When the AC-500CE is connected to the VTR with a 4-pin cable, the power will be supplied to the VTR.

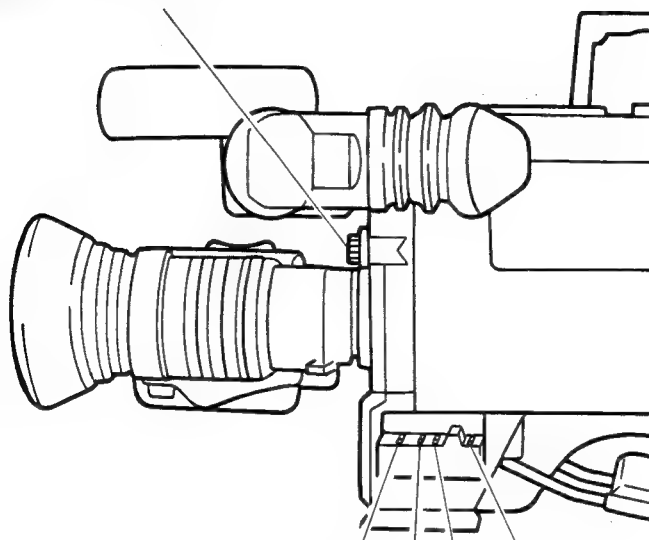
### Connection with the CCU-300P/CCU-300PL



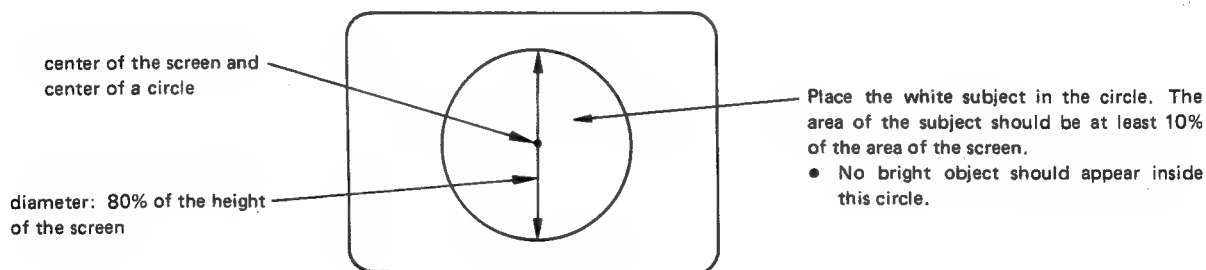
## 1-6. ADJUSTMENTS

### 1-6-1. White Balance and Black Balance Adjustments

1. Set the **FILTER** selector to the position corresponding to the lighting conditions.



2. Set the switches as follows.
3. Place a white pattern under the same lighting conditions as those under which the recording will be made, and zoom up on a pattern.  
A white object such as white cloth, white wall, etc. can be used instead of the white pattern.  
The minimum white area required for adjustment is as follows.



4. If the automatic iris is not equipped, adjust the iris. If the automatic iris is equipped, set the iris auto/manual switch to auto.
5. Set the **AUTO W/B BAL** switch to **BLK**. The switch automatically returns to the center position when it is released. After about 5 seconds, the black balance is automatically adjusted and the **W/B CENT** indicator in the viewfinder will light. The indicator will go off after about 5 seconds. The adjusted value will be memorized.
  - The shutter closes when the switch is set to **BLK**.

6. Set the AUTO W/B BAL switch to WHT. After about 1 second, the white balance will be automatically adjusted and memorized in the same way as above.

The white balance and the black balance adjustments has been completed.

- While the W/B CENT indicator is lighting, the next adjustment can be started. In this case, the indicator goes off when the switch is set to the other position, and lights again when the adjustment finishes.
- When the zoom lens with automatic iris is used, the hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)
- When the AUTO W/B BAL switch is set to BLK, the setting of the GAIN selector is automatically changed and the noise may appear on the viewfinder screen, but this is not a problem.
- When the lighting conditions of the subject is changed, adjust the white balance only. Readjustment of the black balance is not required.

#### **If the W/B CENT indicator blinks**

Check that the proper filter has been selected and adjust the white balance and black balance again.

#### **When the WHITE BAL switch is set to PRESET**

The white balance at the 3200°K can be obtained when the FILTER selector is set to "1". Adjust the black balance only by setting the AUTO W/B BAL switch to BLK.

#### **Memorizing the white balance and black balance value**

The BVP-30AP has the memory function for the white balance and the black balance. The built-in four memories store the adjusted white balance and black balance values at each filter. The memorized value will be kept for about a week after the power is turned off or until the readjustment is performed.

- The built-in four memories to store the white balance can be reduced to one. Open the RS-20 resistor on the internal AT-16 board.

## **1-6-2. Black Set Adjustment**

The black set is adjusted by the AUTO W/B BAL switch together with the black balance.

To adjust the black set manually, use the volume on the built-in circuit board. For details, refer to Section 2.



### 1-6-3. Centering Adjustment

The centering of the R, G and B pickup tubes has been adjusted at the factory, so normally no readjustment will be necessary. If the centering adjustment is necessary, adjust as follows.

Adjust the white balance beforehand as indicated in 1-6-1.

1. Set the AUTO CENT switch to MEMORY.
2. Set the iris auto/manual switch on the lens to auto. Be sure that the iris is not fully open. If the iris is fully open, add illumination.
3. Shoot the supplied chart or an object.

#### When using the supplied chart

Adjust the camera position so that the supplied chart fills the screen.

#### When not using the supplied chart

Adjust the camera position so that the object is placed within the circle whose center is at the center of the screen and whose diameter is 80% of the height of the screen.

- Use an object which has both horizontal and vertical lines with appropriate contrast.
  - If possible, use the black-and-white picture so that the level of the R, G, B will be nearly the same. An object of one color or with one deep color may cause a centering error.
  - Do not use a moving object and do not move the camera quickly during adjusting.
  - Avoid using an object with thin lines, such as a registration chart.
4. Set the AUTO CENT switch to START. The switch automatically returns to the MEMORY position when it is released. After about 10 seconds, the centering is automatically adjusted and the W/B CENT indicator in the viewfinder will light. The indicator will go off after about 5 seconds.
    - While the centering being adjusted, the image enhancer is set to off and the edges in the circle whose diameter is 70% of the height of the screen are emphasized.
  5. Adjust the white balance again as the centering error may affect the white balance.

#### If the W/B CENT indicator blinks

An inappropriate test object is being used or

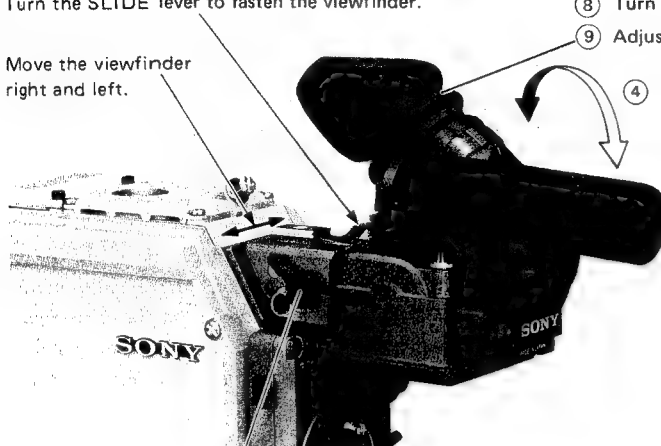
- The object has not enough edges and contrast.
- The iris setting is not proper.
- The object is out of focus.
- The object has moved during adjusting.
- The centering is out of the adjustable range.

Determine the cause and readjust.

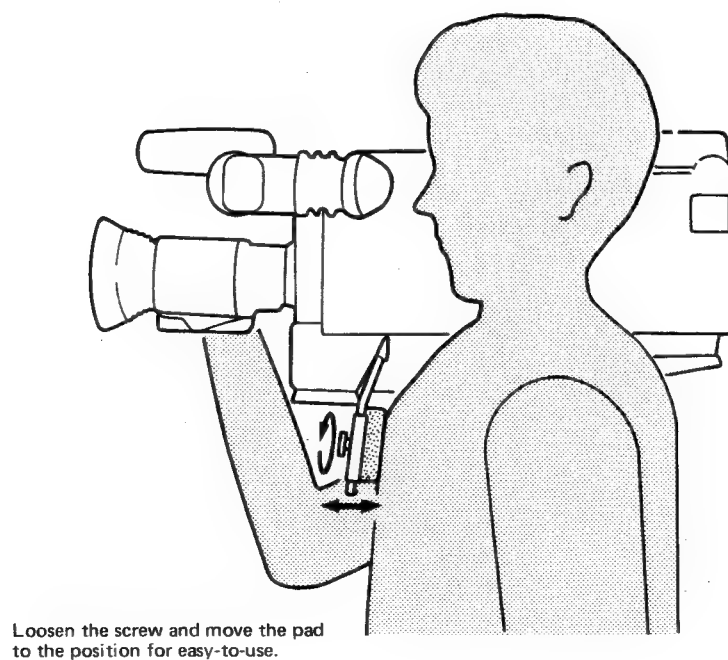
#### Memorizing the centering value

The adjusted centering value can be memorized in the same way as the white balance and black balance values and be kept for about one week after the power has been turned off. When more than one week has passed after the power has been turned off, the memory will be the factory-set value.

#### 1-6-4. Viewfinder Adjustment

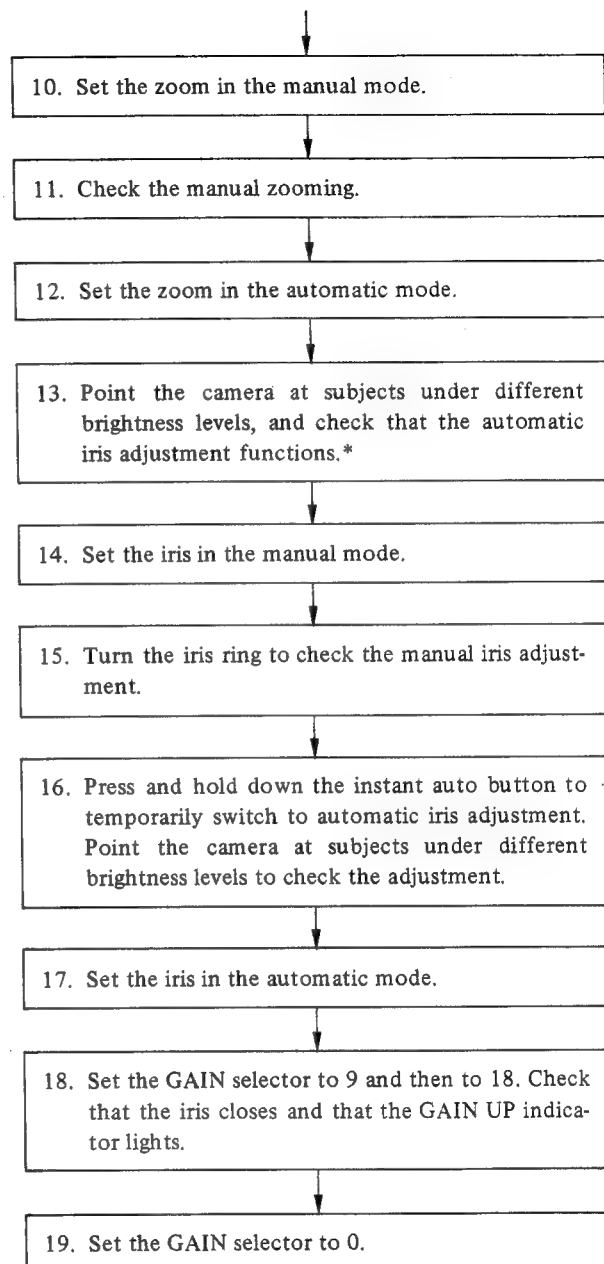
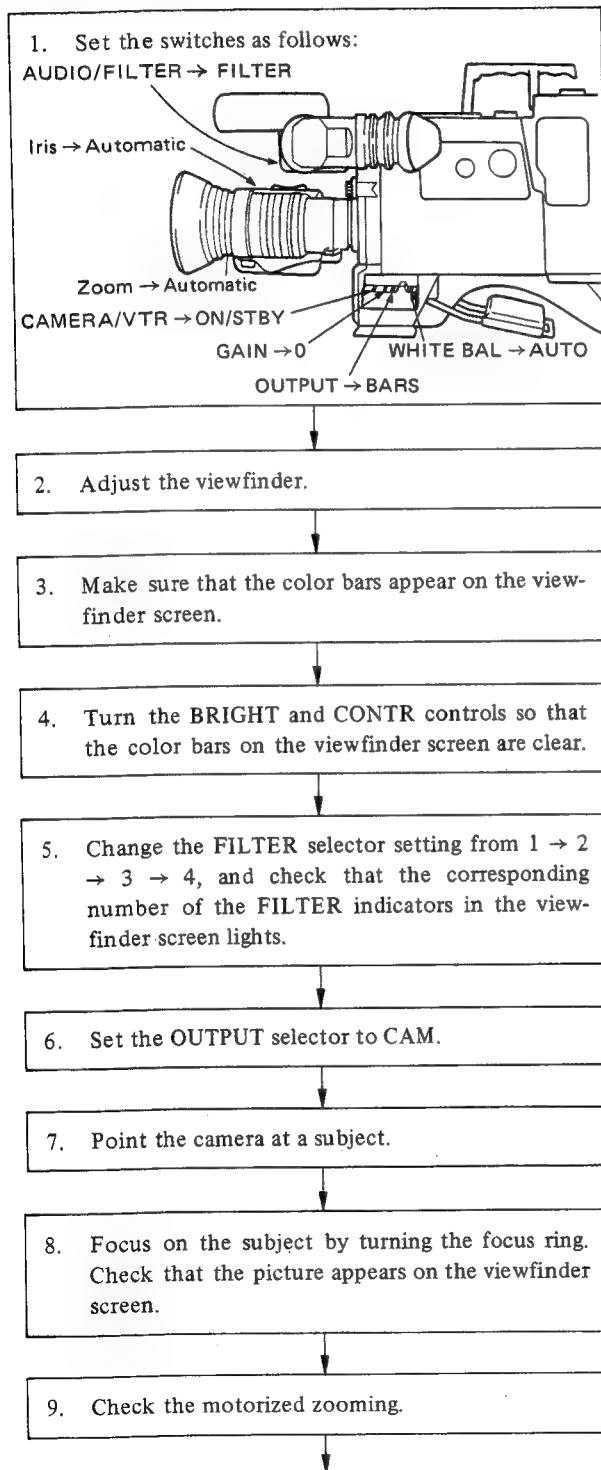
- ⑤ Turn the SLIDE lever to loosen it.  
⑦ Turn the SLIDE lever to fasten the viewfinder.  
⑥ Move the viewfinder right and left.  
⑧ Turn the power on and display the picture on the screen.  
⑨ Adjust the eyepiece focus control.  
④ Adjust the angle.  
② Turn the viewfinder until it will be horizontal.
- 
- ① Turn the ROTATION lever to loosen it.  
③ Turn the ROTATION lever to fasten the viewfinder.

#### 1-6-5. Brace Adjustment



## 1-7. OPERATION CHECKS

- The following is an example of operation. For details on operation of the lens, please refer to the instruction manual furnished with the lens.

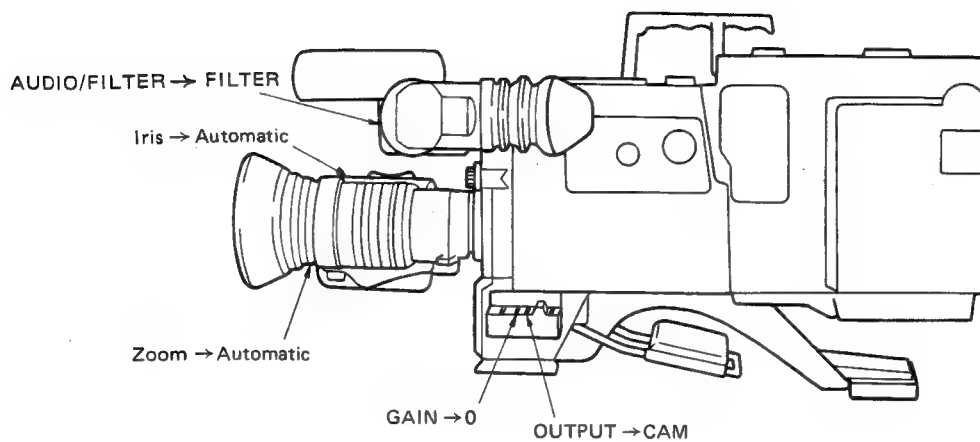


- \* When the lens with a 6-pin connector is used, the hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)

## 1-8. OPERATION

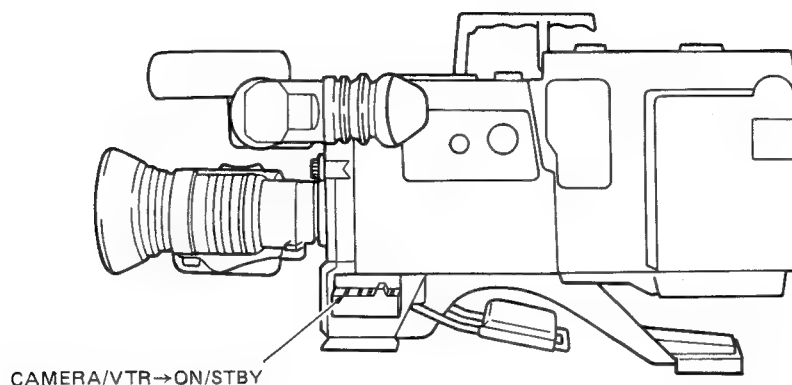
### 1-8-1. Preparation

Before operation, set the switches as follows.



## 1-8-2. Camera Recording

1. Turn on the power of the camera and the connected equipment.



2. Insert a cassette tape.
3. Select the appropriate filter.
4. Adjust the white balance and black balance.  
When the white balance and black balance value has been memorized  
Set the WHITE BAL switch to AUTO.

When the white balance and black balance value is not memorized but you want to start recording quickly  
Set the WHITE BAL switch to PRESET and set the AUTO W/B BAL switch to BLK. The white balance and black balance at 3200°K is obtained.

### To adjust the white balance and black balance

- ① Set the WHITE BAL switch to AUTO.
  - ② Shoot the white subject.
  - ③ Set the AUTO W/B BAL switch to BLK. When the W/B CENT indicator in the viewfinder lights, the black balance is adjusted.
  - ④ Set the AUTO W/B BAL switch to WHT. When the W/B CENT indicator in the viewfinder lights, the white balance is adjusted.
- For details, refer to "1-6-1. White Balance and Black Balance Adjustments".
5. Point the camera at the subject and adjust focus and zoom.
  6. Press the VTR button to start recording. The REC indicator in the viewfinder lights during recording.
  7. To stop recording, press the VTR button again.

### Recording under the insufficient lighting

If a clear picture cannot be obtained because of insufficient lighting, set the GAIN switch to "9" or "18". The video output level can be raised 9 dB by setting the GAIN switch to the 9 position, and 18 dB by setting at the 18 position.

- Normally, set the selector to "0".

### Checking the video level

The zebra pattern will appear on the part of the viewfinder screen where the video level of the picture is 70% (IRE UNIT). For manual iris adjustment, you can use this function for the appropriate setting. The zebra pattern can be disappeared by the TALLY/ ZEBRA ON/OFF switch. However if the switch on the built-in circuit board is set to OFF, the zebra pattern cannot be turned on and off with the TALLY/ZEBRA ON/OFF switch. For details, refer to Section 2.

## 1-9. PRECAUTIONS

### **Never point the camera directly at the sun.**

Pointing the camera directly at the sun or other source of bright light may damage the pickup tube. Avoid continuous shooting of a subject in strong light, which may also damage the pickup tube. If shooting in a strong light is necessary, close the iris as much as possible.

### **Avoid rough handling or mechanical shock to the camera.**

### **After using the camera**

Turn off the power of an equipment connected to the camera.

### **Operating and storage locations**

Avoid operating and storing the camera in the following locations.

- Extreme hot or humid places (The operating temperature is from  $-20^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ ,  $-4^{\circ}\text{F}$  to  $+104^{\circ}\text{F}$ .)
- Places subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Places with subject to a strong magnetic field.

Keep the camera in a horizontal positions and allow adequate air circulation.

### **Clean the viewfinder lens with a lens cleaner available at camera stores.**

Do not use any type of solvent, such as alcohol, benzine or thinner.

## 1-10. SPECIFICATIONS

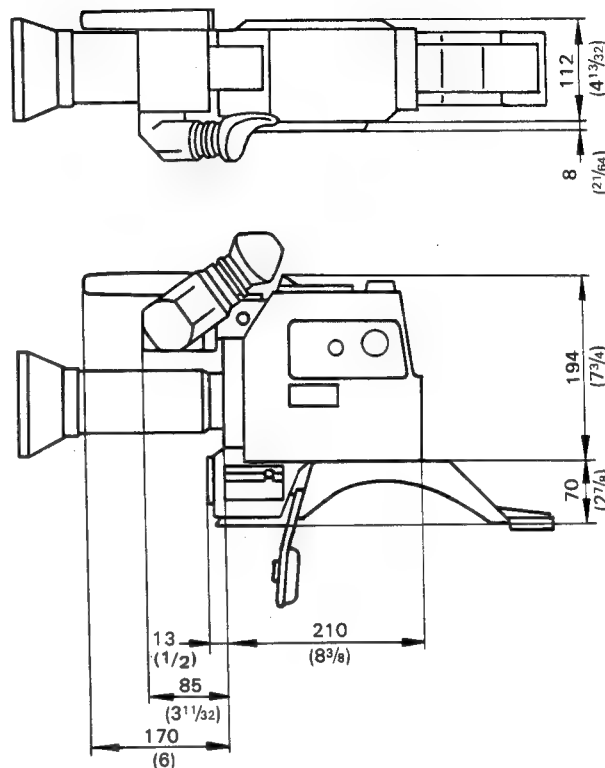
### Camera

Pickup tube	2/3-inch Plumbicon (magnetic focus, static deflection)
System	RGB 3-tube system (with quartz filter)
Spectral system	F1.4 prism system
Built-in filters	1: 3200°K 2: 5600°K + 1/4ND 3: 5600°K 4: 5600°K + 1/16ND
Lens mount	Special bayonet mount
Video output	PAL, 1.0 V(p-p), 75 ohms, unbalanced, sync negative Two outputs (TEST OUT, VTR connector)
Connectors	VTR: 50 pin (video output, microphone output, sync output, power input) TEST OUT: BNC type LENS: 6 pin, 12 pin REMOTE: 6 pin
Sensitivity	2000 lux with f4.5 (typical), 89.9% reflectance
Minimum subject illumination	25 lux (f1.4, +18 dB gain)
Video signal-to-noise ratio	57 dB (typical)
Horizontal resolution	650 (center)
Registration	0.1% for Zone I (within circle with a diameter corresponding to 80% of picture height) 0.15% for Zone II (within circle with a diameter corresponding to picture width) 0.3% for Zone III (others)
Geometric distortion	Less than 1%
Power requirements	12 Vdc (10.5 - 17 V)
Power consumption	24W
Warm-up time	Approx. 3.5 seconds (from preheat condition)
Operating temperature	-20°C to +50°C (-4°F to +122°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Weight	46 kg with viewfinder (10 lb 2 oz)

Design and specifications subject to change without notice.

### Dimensions

Unit: mm (inches)



### Viewfinder

Picture tube	1.5-inch monochrome BRIGHT control, CONTR control, TALLY/ZEBRA ON/OFF switch, PEAKING switch, AUDIO/FILTER switch, AUDIO CH-1 control
Resolution	500 TV lines
Microphone	Sharp-directional

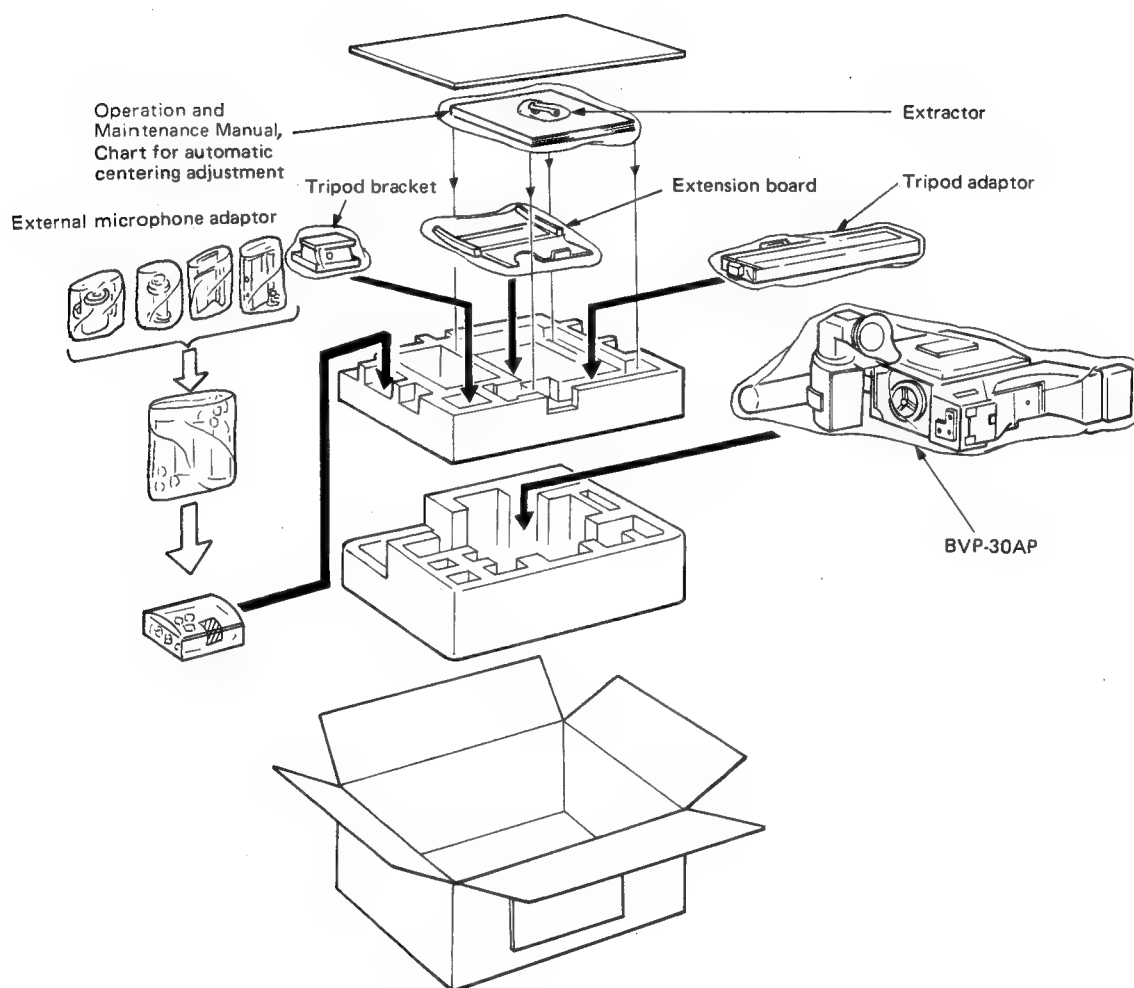
### Supplied accessories

Tripod adaptor x1  
Tripod bracket x1  
Extension board x1  
Extractor x1  
Chart for automatic centering adjustment x1  
External microphone adaptor x1

### Recommended equipment

BVV-1PS, BVV-1APS portable videocassette recorder  
CA-3, CA-30P, camera adaptor  
AC-500CE AC adaptor  
RM-P3 remote control unit  
BVF-50 video monitor

## 1-11. PACKING OF THE BVP-30AP





## **1-12. HOW TO OPERATE THE BETACAM SYSTEM BVW-30AP**

### **1-12-1. Features**

#### **Compact and lightweight**

The BVP-30AP camera, the BVV-1PS/BVV-1APS VTR, lens, battery and cassette tape together weigh only about 10 kg.

#### **Wireless system**

The camera, VTR, viewfinder, battery, microphone, etc. can be connected without using cables.

#### **Low power consumption**

The power consumption is so low that the unit can be operated for about 30 minutes with a single NP-1 battery pack when the BVV-1PS/BVV-1APS is used together.

#### **Video and audio confidence**

The video and audio confidence system makes it possible to check the recording picture and sound.

#### **High-quality picture**

A newly-developed recording system using 1/2-inch cassette tape has greatly improved the picture quality, which now approaches the quality of the 1-inch VTR picture. The three-pickup tube camera using Magnetic focus-Static deflection Plumbicon tubes also assures high quality picture.

#### **Built-in time code generator**

A built-in time code generator allows simultaneous recording of the time code during operation. The user bit can also be recorded.

#### **Independent time code track**

The time code track is independent of the video track so that time code recording or erasing is possible using an editing machine.

#### **Two audio channels**

The sound from a built-in microphone or external microphones or the sound from other audio sources can be recorded on two audio channels separately.

#### **Composite shooting**

Videocassette programs can be composed shot-by-shot without any glitches between scenes because vertical-interval timing with a tape back-up feature guarantees a clean cut every time.

#### **Warning system**

If there is a problem, warning lamps allow you to monitor the operation and alarm is sounded simultaneously from the speaker or earphone.

#### **Tape remaining time indicator**

The tape remaining time indicators are situated in the viewfinder.

#### **Use of the wireless microphone system**

A receiver of the Sony wireless microphone system can be attached to the system.

#### **Additional battery pack**

One more battery pack can be used together with the battery pack installed in the battery compartment of the BVV-1PS/BVV-1APS.

#### **Dolby NR\* (Noise Reduction) C-type system for improving sound quality**

The newly developed C-type Dolby NR system is employed for an improved S/N ratio and wider dynamic range. To activate the Dolby NR circuit, refer to section 2 of the BVV-1PS/BVV-1APS instruction manual.

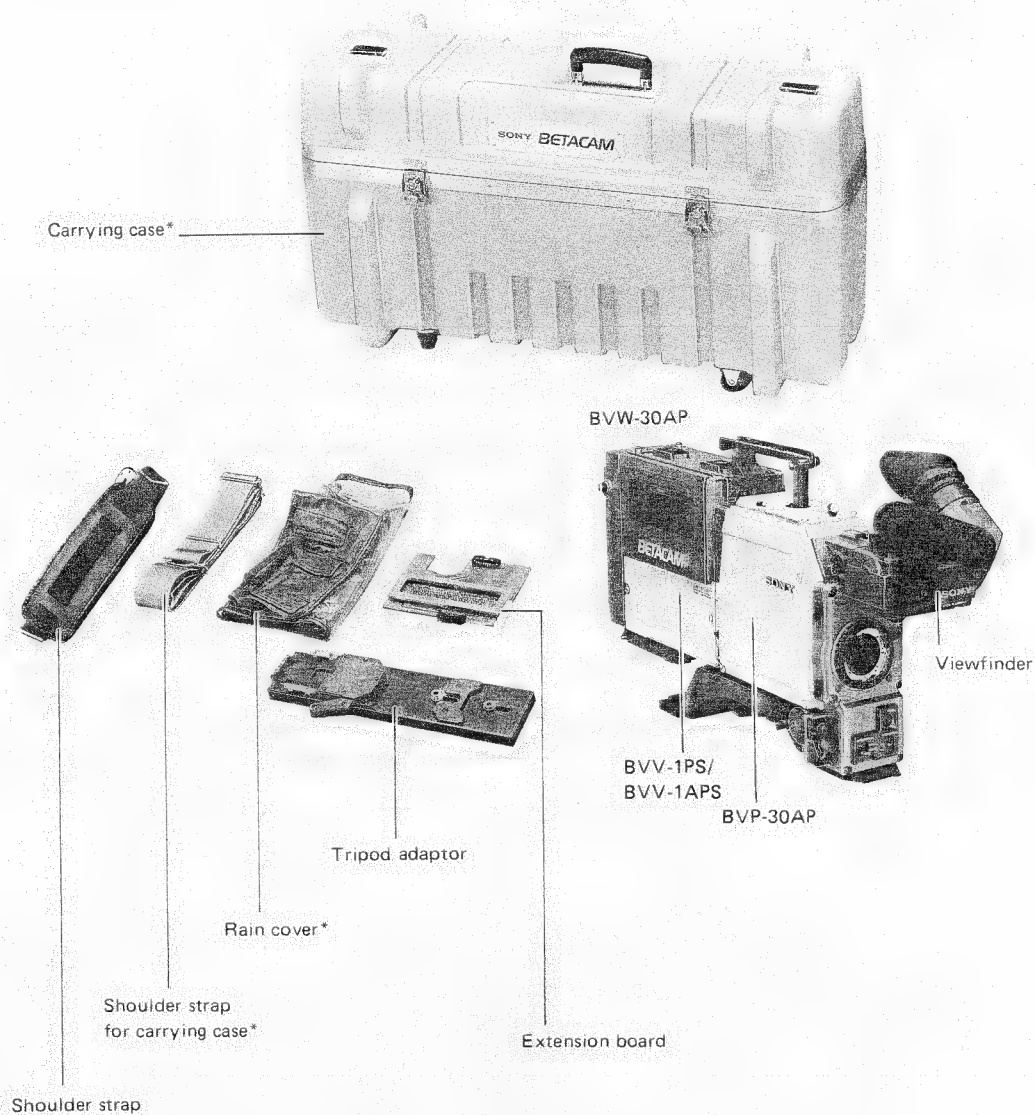
- \* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

#### **Note**

When the BVV-1PS with the serial No. 49999 or less is used, the following functions of the BVW-30AP do not work.

- The audio level indicator in the viewfinder
- The recording level control of audio channel 1

## 1-12-2. Components of the BVW-30AP



Battery compartment lid strap  
 Chart for the automatic centering adjustment  
 External microphone adaptors  
 Extractor  
 50-pin caps  
 Time code cable  
 6-pin connector

\* A carrying case, a shoulder strap for carrying case and a rain cover are supplied to the Betacam system BVW-30AP. When a BVV-1PS/BVV-1APS VTR and a BVP-30AP camera are obtained separately, they will not be supplied. To obtain them, please consult your Sony personnel.

### 1-12-3. Check Routines

Before operation, we recommend to perform the following check and confirm that the Betacam system works correctly. In this case, use a color monitor to check the picture.

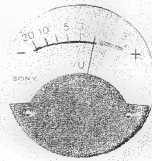
#### 1. Preparation

1. Insert a fully-charged battery pack.

2. POWER switch → ON

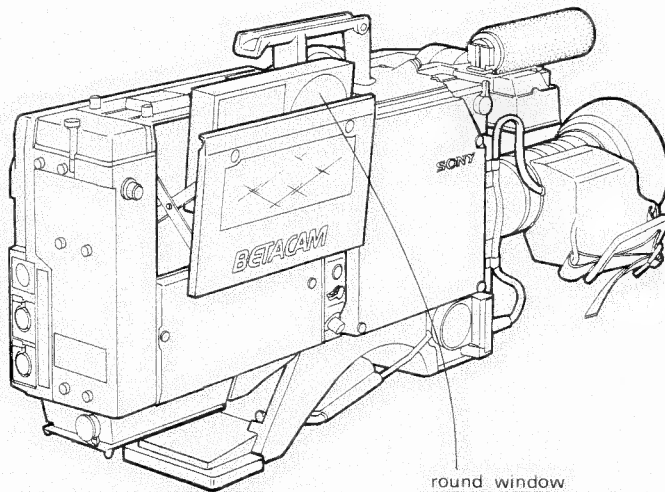
3. Check that the HUMID lamp does not light.

4. Check the battery.  
Set the METER SELECT switch to BATT and check that the meter pointer deflects into the green zone.



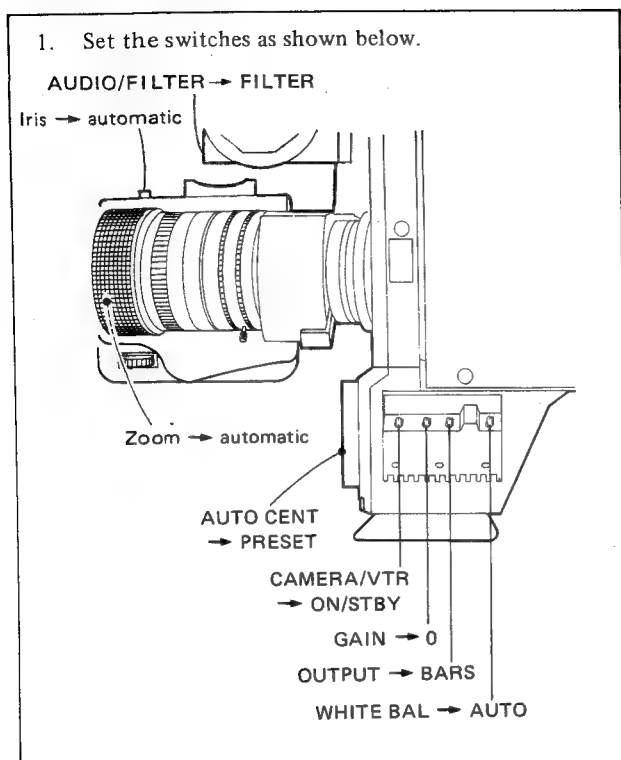
5. Set the time code or the user bit, if necessary.

6. Insert a cassette tape.



- Check that the safety tab on the bottom of the cassette is in place.

## 2. Check the camera



2. Adjust the position of the viewfinder.

3. Check that the color bars appear on the viewfinder.

4. Turn the BRIGHT control and CONTR control on the viewfinder so that the color bars on the viewfinder screen can be seen clearly.

5. Turn the FILTER selector 1 → 2 → 3 → 4 and check that the filter indicator in the viewfinder lights in turn according to the position of the FILTER selector.

6. Set the OUTPUT selector to CAM.

7. Point the camera to the appropriate subject.

8. Turn the focus ring so that the subject is in the focus. Check that the subject appears on the viewfinder screen.

9. Check the motorized zoom function.

With the motorized zoom knob, the picture changes from wide-angle to telephoto and vice versa.

10. Set the zoom in the manual mode.

11. Check the manual zoom function.

Turn the manual zoom lever and check that the picture changes from wide-angle to telephoto and vice versa.

12. Set the zoom in the automatic mode.

13. Point the subject with different brightness and check that the auto iris mechanism functions. \*

14. Set the iris in the manual mode.

15. Turn the iris ring and check that iris is adjusted.

16. Press and hold down the instant auto button to temporarily switch to automatic iris adjustment. Point the camera at subjects under different brightness levels to check the adjustment.

17. Set the iris in the automatic mode.

18. Set the GAIN selector to 9 and to 18. Check that the iris closes and that the GAIN UP indicator in the viewfinder lights.

19. Set the GAIN selector to 0.

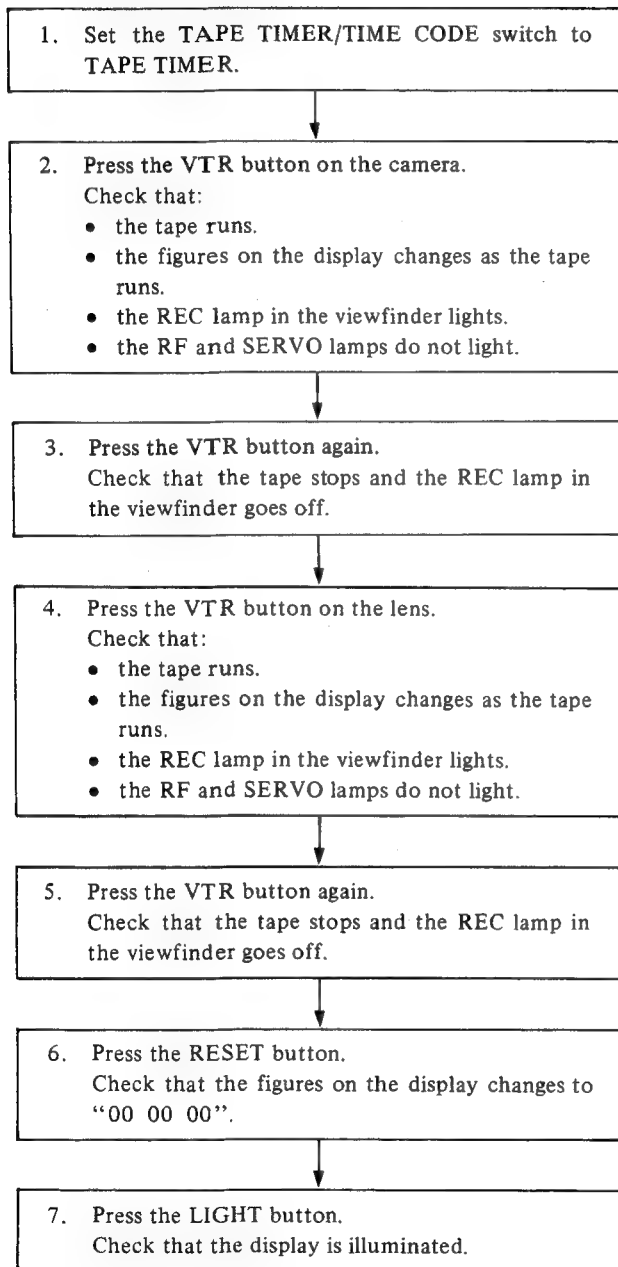
20. Set the AUDIO/FILTER switch to AUDIO. Check that the FILTER/AUDIO indicator shows the audio level.

\* When a lens with a 6-pin connector is used, hunting may occur. In this case, adjust the AUTO IRIS GAIN control on the lens. (For details, refer to the instruction manual furnished with the lens.)

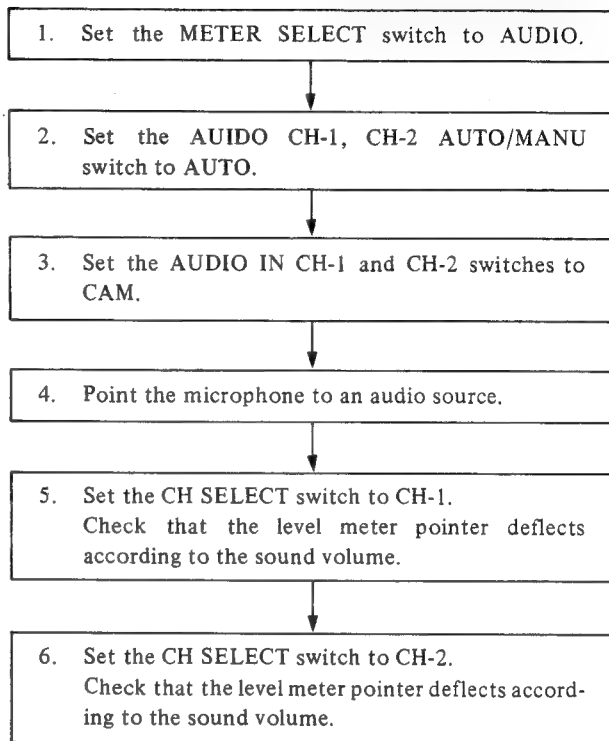
### 3. Check the VTR

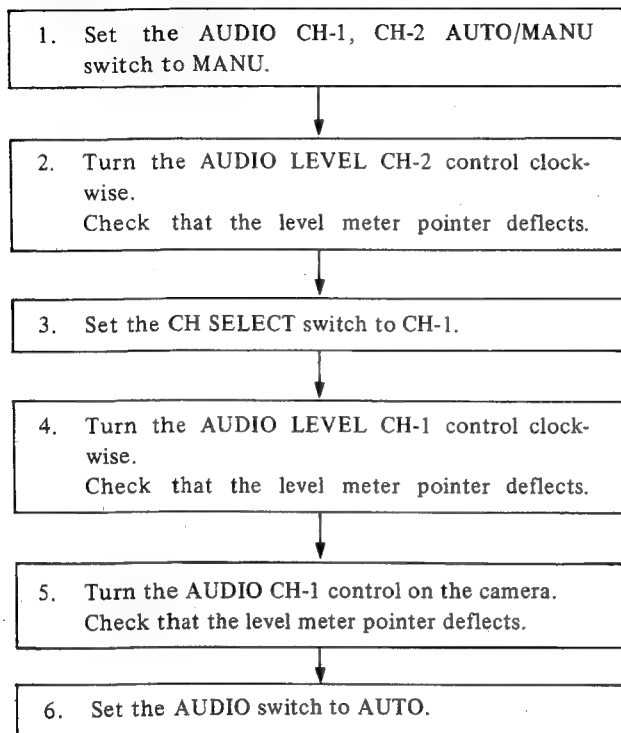
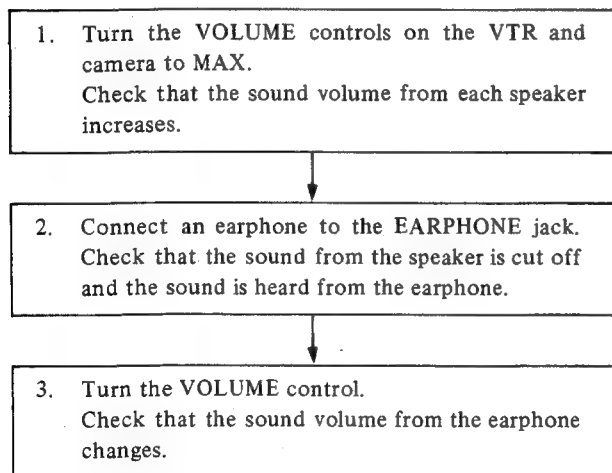
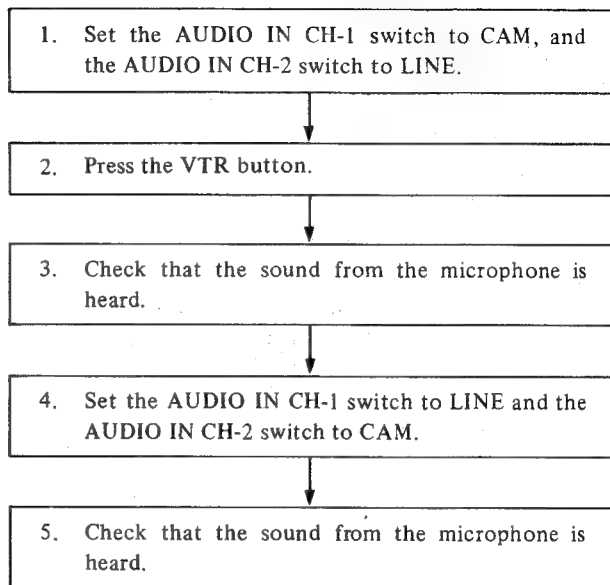
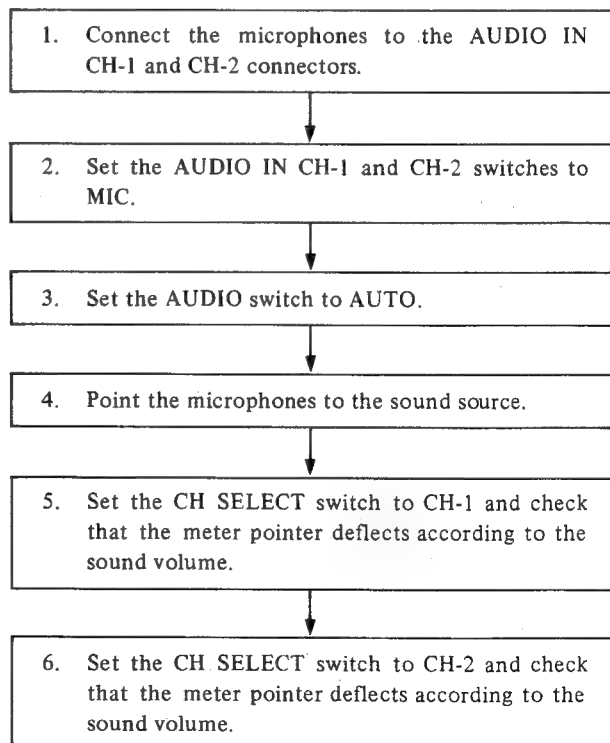
Perform the 3-1. through the 3-5. continuously.

#### 3-1. Check the tape transport



#### 3-2. Check the automatic audio recording level adjustment

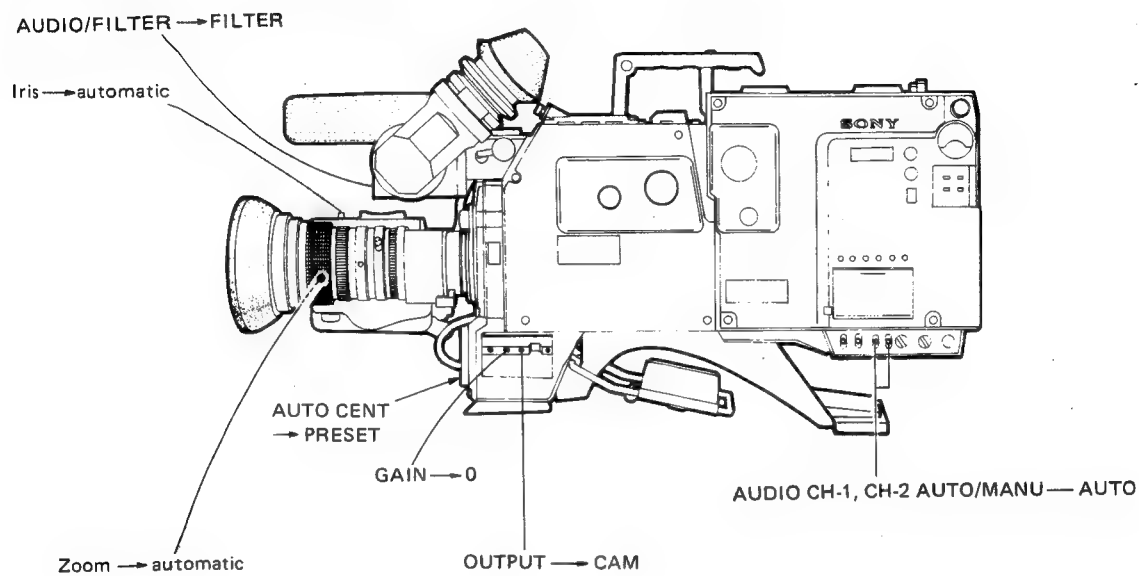


**3-3. Check the manual audio recording level adjustment****3-4. Check the earphone and speaker****3-5. Check the audio confidence function****3-6. Check the external microphones**

## 1-12-4. Operation

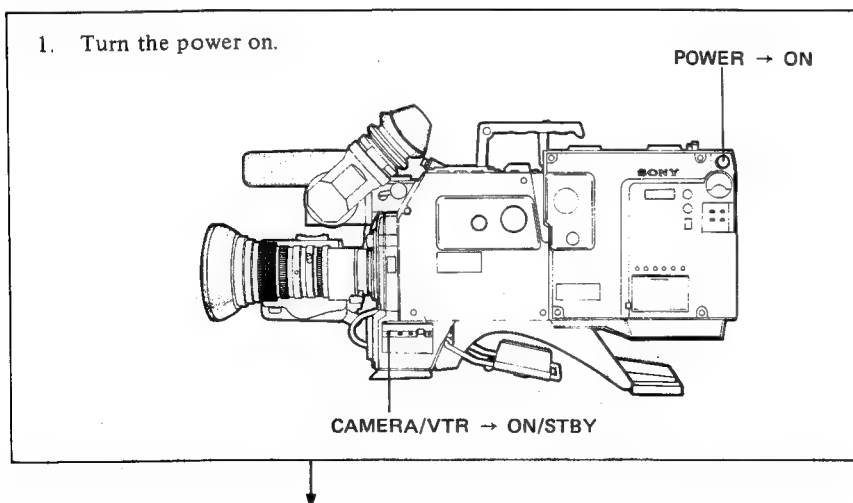
### 1. Preparation

Before starting operation, check that the switches are set correctly as shown below.



### 2. Recording

1. Turn the power on.





2. Insert a cassette tape.

3. Select the appropriate filter according to the lighting conditions.

4. Adjust the white balance and the black balance.

**When the white balance and the black balance value has been memorized**  
Set the WHITE BAL switch to AUTO.

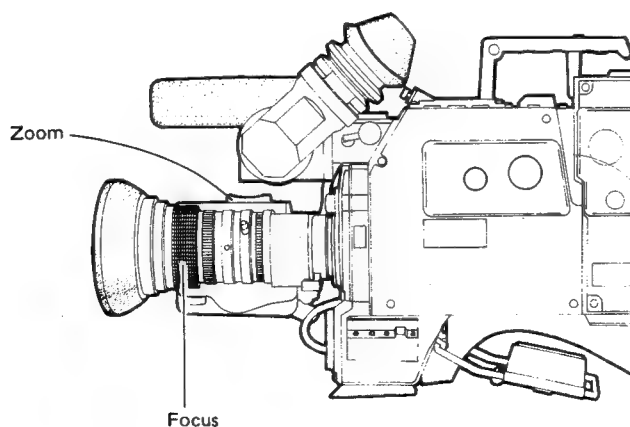
**When the white balance value is not memorized but you want to start recording quickly**

Set the WHITE BAL switch to PRESET and set the AUTO W/B BAL switch to BLK. The white balance and the black balance at 3200°K is obtained.

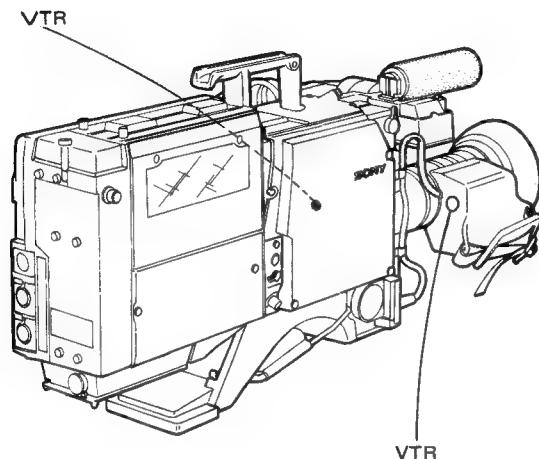
**To adjust the white balance and the black balance**

1. Set the WHITE BAL switch to AUTO.
  2. Zoom up the white subject.
  3. Set the AUTO W/B BAL switch to BLK. When the W/B CENT indicator lights, the black balance is adjusted.
  4. Set the AUTO W/B BAL switch to WHT and check that the W/B CENT indicator lights.
- For details on the white balance and black balance adjustments, see "1-6. Adjustments".

5. Point the camera to the subject and adjust the focus and zoom.



6. Press the VTR button on the lens or on the camera and the recording begins.



The REC lamp in the viewfinder lights during recording.

7. To stop recording, press the VTR button again. The VTR is in the standby mode and the REC lamp goes off.

#### Manual recording level adjustment

The audio recording level can be adjusted manually with the method as shown below. When the BVV-1PS with the serial No. 50000 and higher or the BVV-1APS is used, the audio channel-1 can be adjusted both on the VTR and on the camera.

1. Set the AUDIO IN switches for both audio channels as follows:
  - When the built-in microphone is used → CAM
  - When an external microphone is used → MIC
  - When a line input signal is recorded → LINE
2. Set the AUDIO CH-1, CH-2 AUTO/MANU switches to MANU.
3. Adjust the level of channel 1 as follows.
  - 1) Turn the AUDIO LEVEL CH-1 control on the VTR fully clockwise.
  - 2) Set the AUDIO/FILTER switch on the camera to AUDIO.
  - 3) Turn the AUDIO CH-1 control on the camera so that the 1 through 4 lamps of the FILTER/AUDIO indicator is usually lit and the red indicator is momentarily lit at the maximum input.
  - The maximum attenuation of the AUDIO CH-1 control on the camera is approximately 20 dB. If an appropriate level cannot be obtained within this range, adjust the level by using the AUDIO LEVEL CH-1 control on the VTR.
  - The FILTER/AUDIO indicator in the viewfinder shows the following level responding to the peak signal.

1	2	3	4	
---	---	---	---	--

Level meter indication (VU)     -6   -4   0   +3+6
4. The level of the channel 2 is adjusted by the AUDIO LEVEL CH-2 control on the VTR so that the point of the level meter deflects to 0 VU at the maximum input.

1-12-5. Warning System

The indicators and lamps in the viewfinder, the warning lamps on the VTR and the alarm from the speaker or the earphone serve to advise the operator of the following operational states.

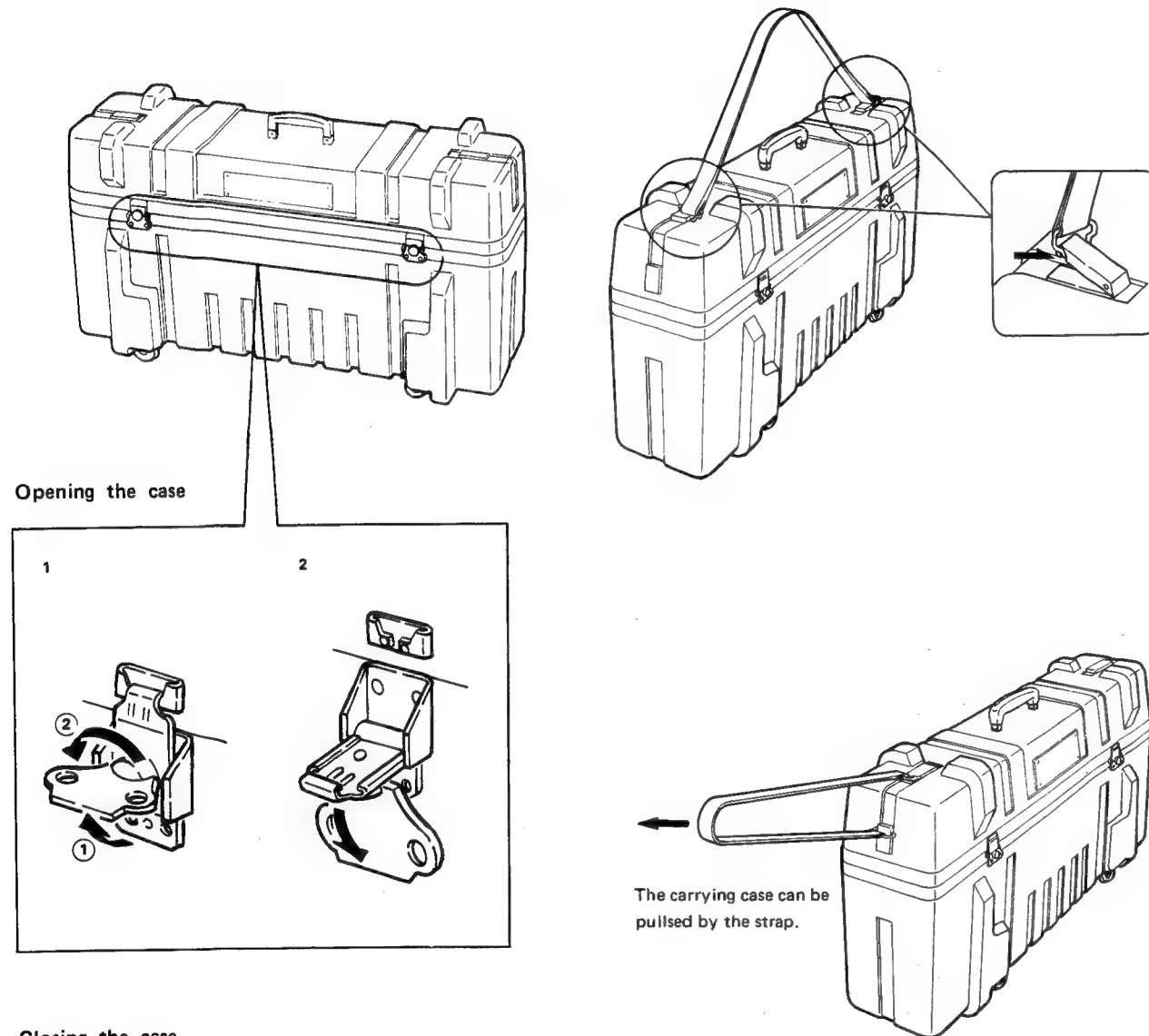
Cause	Lamps in viewfinder			Lamps on VTR						Alarm sound	VTR Operation and Correction
	REC	TAPE 5M	BATT	RF	SERVO	HUMID	SLACK	TAPE END	BATTERY		
Tape nearly at its end										W W	Recording continues.
End of tape										~~~~~	Recording stops. Change cassettes.
Battery near end										W W	Recording continues.
Battery end										~~~~~	Recording stops. Change batteries.
Something wrong in the recording system										W W W	Recording continues but may not be performed correctly. Head-cleaning is required. (For details on head-cleaning, see the instruction manual of the BVV-1PS/BVV-1APS.)
Irregularity in servo										W W W	Recording continues but may not be performed correctly. Turn off the power and consult your Sony dealer. The lamp may momentarily blink when the tape starts running, but this is not a problem.
Moisture condensation										W W W	Recording continues as long as the tape does not stick to the head drum. If this happens, recording will stop and the tape will be unthreaded.
Slack tape										~~~~~	Recording stops. The POWER switch and the EJECT button do not function. Remove the cassette manually referring to the section 2 of the BVV-1PS/BVV-1APS's instruction manual.

Marks			
Lamps		Sound of alarm	
	Blinks in 1 Hz	W W	In 1 kHz, 1 second interval
	Blinks in 4 Hz	W W W	In 1 kHz, 1/4 second interval
	Lights up	~~~~~	Continuous sound

### 1-12-6. How to use the carrying case

For packing, refer to "1-12-8. Packing of the BVW-30AP".

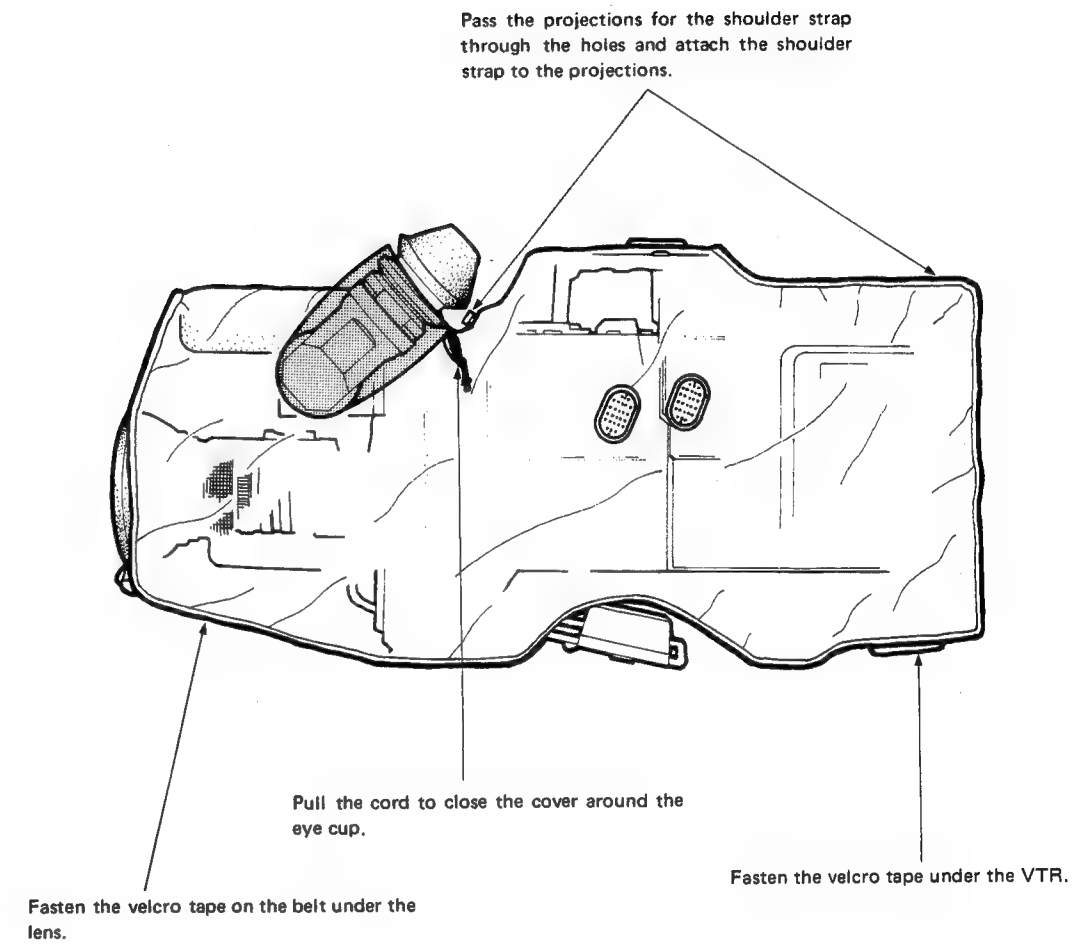
### Attaching the shoulder strap for the carrying case



### Notes

- Avoid strong vibration or shock.
- Do not stand on the carrying case.

### 1-12-7. Attaching the rain cover



# TEIL 1

## BETRIEB

Die BVP-30AP ist eine leichte und kompakte Farb-Video-Kamera. Sie besitzt drei 2/3"-Plumbicon\* Aufnahmeröhren mit magnetischer Fokussierung und statischer Ablenkung. Durch Zusammenschluß mit dem portablen Videorecorder BVV-1PS/BVV-1APS erhält man das Betacam System BVW-30AP, das sich für elektronische Berichterstattung (EB) eignet und für dessen Bedienung nur ein Mann erforderlich ist.

\* PLUMBICON ist ein eingetragenes Warenzeichen von N.V. PHILIPS.

### 1-1. BESONDERE MERKMALE

#### Hohe Bildqualität

Die Aufnahmeröhren mit magnetischer Fokussierung und statischer Ablenkung liefern aufgrund der folgenden Merkmale eine ausgezeichnete Bildqualität.

- Hohe Auflösung über den gesamten Bildschirm.
- Ablenkungsverzerrungen sind gering und die Farbdeckung kann präzise eingestellt werden.
- Plumbicon® Röhren mit Dioden-Kanonen und hoher Betriebsspannung garantieren scharfe Bildwiedergabe.
- Das Signal wird über Stiftanschlüsse herausgeführt und die erste Stufe mit FET-Transistor ist in die Spule eingebaut, so daß sich ein hoher Signal-Rauschabstand ergibt.

#### Kompakt und leicht

Dank dem leichten, dabei aber stabilen Gehäuse aus Magnesium-Guß und der kompakten Gesamtauslegung ist die BVP-30AP äußerst bequem zu handhaben.

#### Hohe Empfindlichkeit

Der Videoausgangspegel kann um 9 dB oder 18 dB angehoben werden. Selbst bei 18 dB ist noch eine gute Bildqualität gewährleistet, so daß Aufnahmen auch unter schlechten Lichtverhältnissen möglich ist.

#### Automatischer Weiß- und Schwarzabgleich sowie Weißabgleich-Voreinstellung

Bei jeder Filterposition kann ein automatischer Weiß- und Schwarzabgleich durchgeführt und der eingestellte Wert im Memory abgespeichert werden. Die Speicherung bleibt auch dann noch erhalten, wenn die Stromzufuhr abgeschaltet wird. Wird der WHITE BAL-Schalter auf PRESET gestellt, erhält man einen für 3200°K voreingestellten Weißabgleich.

#### Automatische Zentrierung

Dank einer neuentwickelten automatischen Zentriereinrichtung kann die Zentrierung bequem ohne Verwendung eines Zentriertestbildes durchgeführt werden. Der eingestellte Wert wird im Memory gespeichert und bleibt auch dann noch erhalten, wenn die Stromzufuhr abgeschaltet wird.

#### Automatische Strahloptimierung

Durch die automatische Strahloptimierung kann die Kamera die 8-fache Normallichtmenge verarbeiten, ohne daß ein Überstrahl- oder Nachzieheffekt entsteht.

#### Dynamische Strahlfokussierung

Der Schaltkreis zur dynamischen Strahlfokussierung verbessert die Auflösung über die gesamte Bildfläche.

#### Großer Dynamikbereich

Dank einem DCC-Schaltkreis (Dynamic Contrast Control) kann die BVP-30AP bis zum Sechsfachen der normalen Lichtstärke verarbeiten.

#### Warnsystem

Arbeitet der Videorecorder nicht einwandfrei, ist das Band zu Ende oder sind die Batterien erschöpft, so wird dies durch einen Warnindikator im Sucher angezeigt. Bei Zusammenschluß von BVP-30AP und BVV-1PS/BVV-1APS ist außerdem ein Warnton zu hören, und die noch verbleibende Aufnahmezeit wird in den Sucher eingeblendet.

#### Automatische Schließung des Objektivs

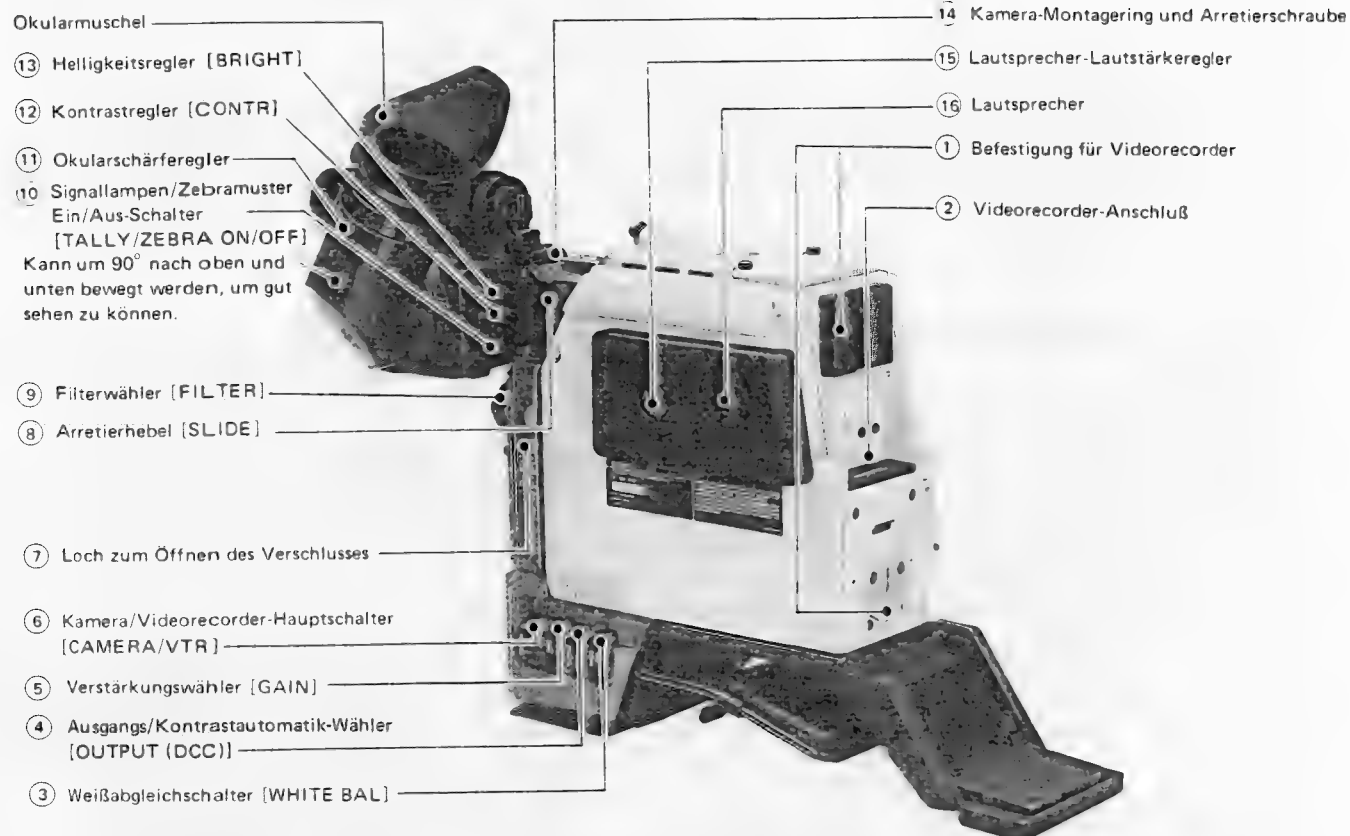
Zum Schutz der Aufnahmeröhren wird das Objektiv in folgenden Fällen geschlossen.

- Wenn der CAMERA/VTR-Schalter auf PREHEAT steht.
- Wenn der OUTPUT-Schalter auf BARS steht.
- Wenn der automatische Schwarzabgleich durchgeführt wird.
- Wenn ein Testsignal herausgeführt wird.
- Wenn das Band zurückgespult wird.

#### Weitere Merkmale der BVP-30AP:

- Geringe Leistungsaufnahme
- Bei Betrieb mit interner Synchronisation wird ein farbträgerverkoppelter Halbbildimpuls herausgeführt.
- Generatorverkopplung bei Verwendung des CA-3 oder CA-30P Kameraadapters
- 2-Zeilen Schärfenanhebung
- Herausziehbare Sonnenblende
- Einmischen eines Silhouettensignals
- Split-Farbbalkengenerator
- Mikrofon mit ausgeprägter Richtwirkung
- Automatische Blendeneinstellung
- Videopegel-Anzeige
- Einstellmöglichkeit des Tonaufnahmepegels von Tonkanal 1
- Zebrawuster-Ein/Aus-Schalter
- Eingebauter Monitorlautsprecher
- Anbringung eines Außenmikrofons möglich
- Sucher mit hoher Auflösung

## 1-2. LAGE UND FUNKTION DER TEILE



### ① Befestigung für Videorecorder

Hier wird der tragbare Videorecorder BVV-1PS/BVV-1APS oder der Kameraadapter CA-3 oder CA-30 usw. angesetzt.

### ② Videorecorderanschluß [50polig]

Der 50-polige Anschluß des Videorecorders BVV-1PS/BVV-1APS oder des Kameraadapters CA-3 oder CA-30P usw. wird hier angeschlossen.

### ③ Weißabgleichschalter [WHITE BAL]

**PRESET:** In der Stellung „1“ des FILTER-Wählers ⑨ erhält man einen werkseitig voreingestellten Weißabgleich auf 3200°K (Farbtemperatur einer Jodlampe). Verwenden Sie diese Position, wenn Sie keine Zeit zum Einstellen des Weißabgleichs haben.

**AUTO:** Im allgemeinen wird diese Position gewählt. In der Stellung WHT des AUTO W/B BAL-Schalters ②⑤ wird der Weißabgleich automatisch eingestellt und gespeichert. In der Stellung AUTO des Weißabgleichschalters erhalten Sie dann immer diesen gespeicherten Wert.

### ④ Ausgangs/Kontrastautomatik-Wähler [OUTPUT (DCC)]

Zur Wahl des am VTR-Anschluß ② oder TEST OUT-Anschluß ②② anliegenden und zum Sucher geführten Signals.

**CAM:** Für das von der Kamera aufgenommene Signal. In der Stellung DCC ON arbeitet der eingebaute DCC-Schaltkreis (Dynamic Contrast Control). Ist keine Kontrastautomatik erwünscht, stellen Sie den Wähler auf DCC OFF.

**BARS (DCC OFF):** Für das Farbbalkensignal. Wählen Sie diese Position, um die Farbbalken zur Einstellung des Video-Monitors zu verwenden oder um die Farbbalken aufzunehmen.

### ⑤ Verstärkungswähler [GAIN]

Dieser Wähler wird normalerweise auf „0“ eingestellt. Wird er auf „9“ oder „18“ gestellt, erhöht sich der Video-Ausgangspegel jeweils um 9 bzw. 18 dB.

### ⑥ Kamera/Videorecorder-Hauptschalter [CAMERA/VTR]

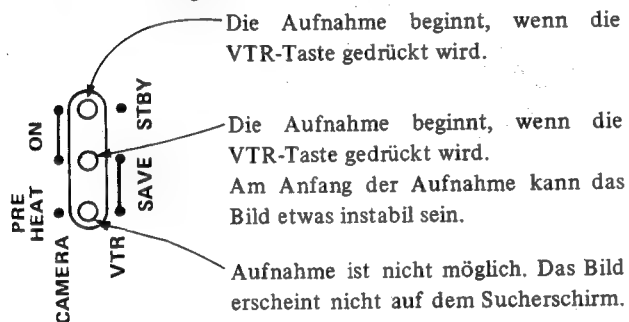
Mit diesem Schalter wird der Strom zur Kamera und zum Videorecorder ein- und ausgeschaltet.

**CAMERA-PREHEAT:** Aufnahmeröhre und Heizung der Sucher-Bildröhre werden mit Strom versorgt; das Bild erscheint jedoch nicht auf dem Sucherschirm. In dieser Schalterstellung wird weniger Strom verbraucht.

**CAMERA-ON:** Alle Teile der Kamera werden mit Strom versorgt, und das Bild erscheint auf dem Sucherschirm.

**VTR-SAVE:** Die Kopftrommel kommt zum Stillstand, und das Band wird freigegeben. Weil in dieser Schalterstellung weniger Strom verbraucht wird, ist eine längere Aufnahmezeit möglich.

**VTR-STBY:** Die Kopftrommel beginnt sich zu drehen, und das Band wird um die Kopftrommel geschlungen.



###### ⑦ Loch zum Öffnen des Verschlusses

Wenn sich der Verschluss bei normalem Betrieb nicht öffnet, so kann er durch Durchstoßen der Öffnung zwangsgeöffnet werden. Überprüfen Sie jedoch zuvor die Stromversorgung und die Anschlüsse. Öffnet sich der Verschluss danach immer noch nicht, nehmen Sie die Gummikappe ab und stoßen Sie mit einem dünnen Stab in das Loch. Der Verschluss öffnet sich dann. Versäumen Sie nicht, sich an Ihren Sony Händler zu wenden, wenn der Verschluss einmal auf diese Art geöffnet werden mußte.

###### ⑧ Arretierhebel [SLIDE]

Zum Arretieren des Suchers stellen Sie den Hebel nach rechts und zum Lösen der Arretierung stellen Sie ihn nach links. Bei gelöster Arretierung kann der Sucher horizontal in die optimale Betriebsposition bewegt werden.

###### ⑨ Filterwähler [FILTER]

Wählen Sie je nach Lichtverhältnissen den geeigneten Filter.

Filternummer	Farbtemperatur	Lichtverhältnisse
1	3200°K	Sonnenaufgang, Sonnenuntergang, im Studio
2	5600°K +1/4ND*	Im Freien bei gutem Wetter
3	5600°K	Bei Regen oder bewölktem Himmel
4	5600°K +1/16ND*	Schneelandschaft bei klarem Wetter, im Gebirge oder am Meer

\*ND: Graufilter

###### ⑩ Signallampen/Zebromuster-Ein/Aus-Schalter [TALLY/ZEBRA ON/OFF]

**ZEBRA:** Das Zebromuster und die Signallampe werden eingeschaltet.

**OFF:** Das Zebromuster und die Signallampe werden ausgeschaltet.

**ZEBRA:** Das Zebromuster wird ein- und die Signallampe wird ausgeschaltet.

###### ⑪ Okularscharferegler

Zum Scharfstellen des Sucherbildes.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal von der Kamera.

###### ⑫ Kontrastregler [CONTR]

Mit diesem Regler wird der Bildkontrast des Sucherschirms eingestellt.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal der Kamera.

###### ⑬ Helligkeitsregler [BRIGHT]

Mit diesem Regler wird die Helligkeit des Sucherschirms eingestellt. Stellen Sie den Regler für helleres Bild nach rechts.

- Dieser Regler hat keinen Einfluß auf das Ausgangssignal der Kamera.

###### ⑭ Kamera-Montagering und Arretierschraube

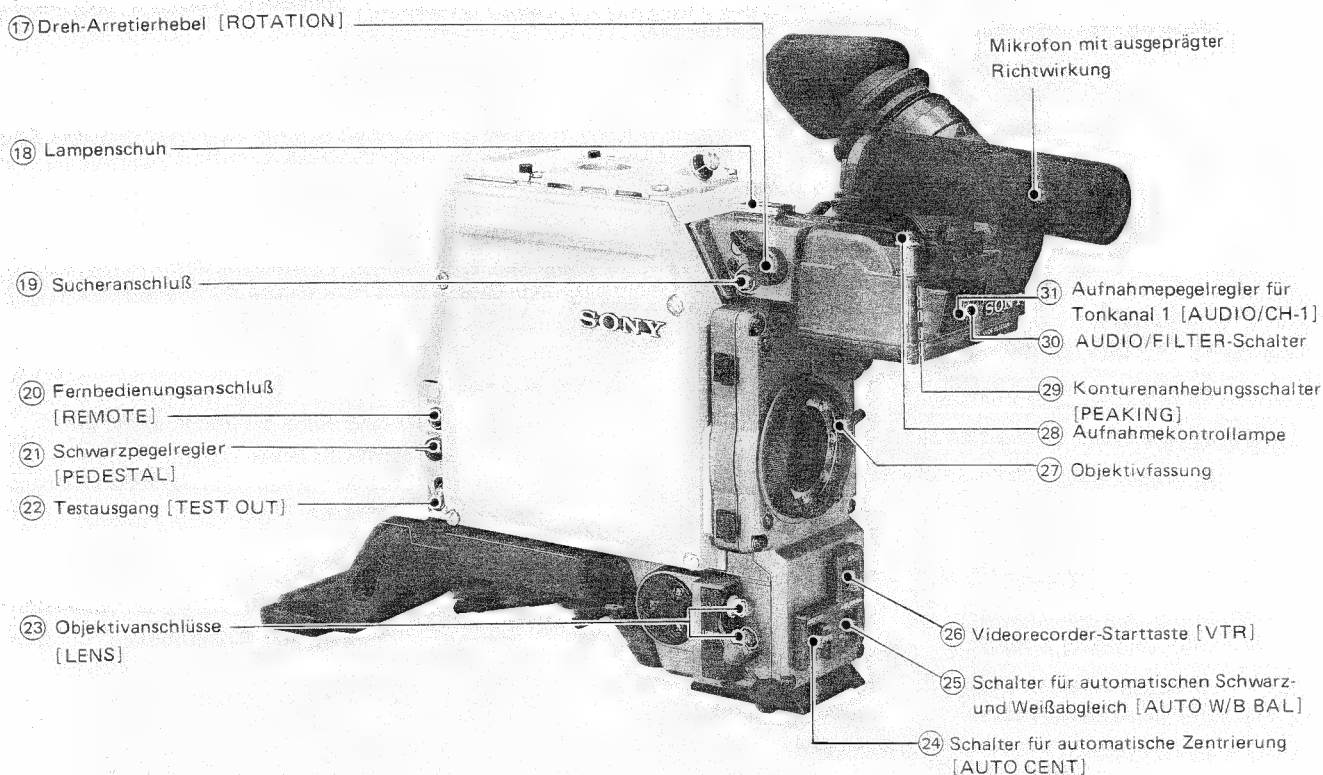
Nehmen Sie den Sucher normalerweise nicht von der Kamera ab. Ist ein Abnehmen jedoch nicht vermeidbar, so öffnen Sie die Arretierschraube und drehen Sie den Befestigungsring vom Objektiv aus gesehen nach rechts. Der Sucher kann dann abgezogen werden. Um den Sucher wieder anzubringen, drehen Sie den Befestigungsring nach links und drehen Sie zur Sicherung die Arretierschraube fest.

###### ⑮ Lautsprecher-Lautstärkeregler

Zur Einstellung der Lautsprecher-Lautstärke. Durch Drehen nach rechts erhöht sich die Lautstärke. Wird der Regler ganz nach links gedreht, ist kein Ton zu hören.

###### ⑯ Lautsprecher

Beim Aufnehmen kann gleichzeitig der Wiedergabeton (Mischsignal von Kanal 1 und 2) überwacht werden. In den anderen Betriebsarten ist der am Videorecorder gewählte E-zu-E-Ton zu hören. Außerdem ist auch ein Warnton entsprechend der Warnanzeigen zu hören.



#### 17 Dreh-Arretierhebel [ROTATION]

Drehen Sie den Hebel zum Befestigen des Suchers nach unten. Durch Drehen nach links kann die Arretierung geöffnet und der Sucher gedreht werden.

#### 18 Lampenschuh

Zum Anbringen einer Videolampe usw.

#### 19 Sucheranschluß (12-pol)

Zum Anschluß des Suchers BVF-50.

- Wird ein Sucher an diesen Anschluß angeschlossen, so nehmen Sie auf jeden Fall den mitgelieferten 1,5"-Sucher von der Kamera ab. Schließen Sie nicht gleichzeitig zwei Sucher an.

#### 20 Fernbedienungsanschluß [REMOTE] (6-pol)

Wird hier eine geeignete Einheit angeschlossen, so kann eine fernbediente Feineinstellung der Blende, des Schwarzpegels und der Verstärkung vorgenommen werden.

#### 21 Schwarzpegelregler [PEDESTAL]

Mit diesem Regler wird der Schwarzpegel eingestellt.

#### 22 Testausgang [TEST OUT] (BNC)

Hier liegen die folgenden, am ENC/REG-Schalter der eingebauten Leiterplatte gewählten Signale an.

**REG:** Die an den R/OFF/B- und G/OFF/-G-Schaltern gewählten R, G, B, R-G oder B-G Testsignale liegen an.

**ENC:** Das kodierte Videosignal liegt an. Verwenden Sie normalerweise diese Stellung.

#### 23 Objektivanschlüsse [LENS] (6-pol, 12-pol)

Schließen Sie das Kabel des Objektivs an den 6-poligen bzw. 12-poligen Anschluß an.

Ihr Sony Händler gibt Ihnen gerne Auskunft darüber, welche Objektive verwendet werden können.



②④ **Schalter für automatische Zentrierung**  
[AUTO CENT]

**PRESET:** Bei Nichtverwendung des gespeicherten Zentrierwertes.

**MEMORY:** Nach der automatischen Zentrierungseinstellung wird der abgespeicherte Zentrierwert verwendet.

**START:** Zur automatischen Zentrierungseinstellung ist die Kamera auf ein geeignetes Objekt auszurichten und der Schalter auf START zu stellen. Beim Loslassen kehrt der Schalter automatisch in die Mittelstellung zurück.

②⑤ **Schalter für automatischen Schwarz- und Weißabgleich** [AUTO W/B BAL]

**WHT:** Für automatischen Weißabgleich stellen Sie den WHITE BAL-Schalter ③ auf AUTO und diesen Schalter auf WHT. Der eingestellte Wert wird automatisch abgespeichert.

**BLK:** Für automatischen Schwarzabgleich und automatische Schwarzeinstellung stellen Sie diesen Schalter auf BLK. Der eingestellte Wert wird automatisch im Memory abgespeichert.

- Beim Loslassen kehrt der Schalter automatisch von der Stellung WHT oder BLK in die Mittelstellung zurück.

②⑥ **Videorecorder-Starttaste** [VTR]

Drücken Sie diese Taste, um mit der Aufnahme zu beginnen. Zum Beenden der Aufnahme drücken Sie dieselbe Taste erneut. Diese Taste hat dieselbe Funktion wie die VTR-Taste am Objektiv. Zum Betätigen dieser Taste entfernen Sie die Abdeckung.

②⑦ **Objektivfassung (Spezial-Bajonettfassung)**

Schließen Sie hier das Objektiv an.

②⑧ **Aufnahmekontrollampe**

Diese Lampe leuchtet oder blinkt, wenn die REC-Anzeige im Sucher leuchtet oder blinkt.

②⑨ **Konturenanhebungsschalter** [PEAKING]

Zur leichteren Schärfeneinstellung können mit diesem Schalter die Bildkonturen angehoben werden. Bei jedem Drücken dieses Schalters wird die Funktion abwechselnd ein- und ausgeschaltet.

③⑩ **AUDIO/FILTER-Schalter\***

**AUDIO:** Der Aufnahmepegel von Tonkanal 1 kann am AUDIO CH-1-Regler eingestellt werden. Die FILTER/AUDIO-Anzeige im Sucher zeigt den Tonaufnahmepegel an.

**FILTER:** An der FILTER/AUDIO-Anzeige im Sucher wird die am FILTER-Wähler eingestellte Filternummer angezeigt. Verwenden Sie stets diese Position, außer wenn die Kamera zusammen mit einem BVV-1PS der Serien-Nr. 50000 oder höher oder einem BVV-1APS verwendet wird.

③⑪ **Aufnahmepegelregler für Tonkanal 1**  
[AUDIO CH-1] \*

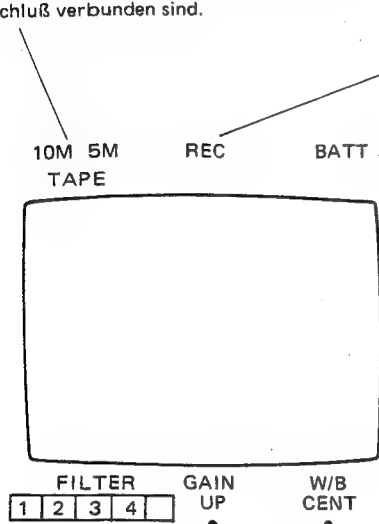
Wenn der AUDIO CH-1 MANU/AUTO-Wähler an der BVV-1PS/BVV-1APS auf MANU und der AUDIO/FILTER-Schalter ③⑩ auf AUDIO gestellt ist, so kann der Aufnahmepegel von Tonkanal 1 manuell eingestellt werden. Beobachten Sie bei dieser Einstellung die FILTER/AUDIO-Anzeige im Sucher.

- \* Dieser Schalter und dieser Regler arbeiten nur, wenn die BVP-30AP zusammen mit einem BVV-1PS der Serien-Nr. 50000 oder höher oder mit einem BVV-1APS verwendet wird.

## Anzeigen im Sucher

### Anzeigen für verbleibende Aufnahmezeit

Zeigt das zur Aufnahme noch zur Verfügung stehende Band in Minuteneinheiten an. Die Anzeigen arbeiten nur, wenn BVP-30AP und BVV-1PS/BVV-1APS direkt über den 50-poligen Anschluß verbunden sind.



#### Aufnahmeanzeige [REC] (rot)

Diese Anzeige leuchtet während Aufnahme und blinkt, wenn eine der Warnlampen am BVV-1PS/BVV-1APS blinkt oder leuchtet. Genauere Informationen finden Sie in der Bedienungsanleitung des Videorecorders.

#### Batterieanzeige [BATT] (rot)

Sind die Batterien erschöpft, so beginnt diese Anzeige einige Minuten bevor die Spannung den zum einwandfreien Funktionieren notwendigen Wert unterschreitet zu blinken. Ist der Wert überschritten, leuchtet die Anzeige konstant auf.

#### Anzeige für Weiß/Schwarzabgleich und Zentrierung [W/B CENT] (orange)

Leuchtet auf, wenn der automatische Weißabgleich, Schwarzabgleich und die Zentriereinstellung beendet sind. Nach 5 Sekunden erlischt die Anzeige. War keine automatische Einstellung möglich, so blinkt die Anzeige ca. 5 Sekunden lang.

#### FILTER/AUDIO-Anzeige

Wenn der AUDIO/FILTER-Schalter auf AUDIO gestellt ist, so wird der Tonpegel angezeigt. Steht der Schalter dagegen auf FILTER, so wird die am FILTER-Wähler gewählte Filternummer angezeigt.

#### Verstärkungsanzeige [GAIN UP]

Diese Anzeige leuchtet, wenn der GAIN-Wähler auf „9“ oder „18“ eingestellt ist.

### Bedeutung der Anzeige für verbleibende Aufnahmezeit

Diese Anzeigen arbeiten nur, wenn BVP-30AP und BVV-1PS/BVV-1APS direkt über die 50-poligen Anschlüsse verbunden sind.

Noch zur Verfügung stehende Zeit (Minuten)	20	15	10	5	2	0
Anzeigen	10M 5M	10M	5M	5M		
Aufnahmeanzeige	REC					REC*

: Blinkt mit 1 Hz

\* : Blinkt mit 4 Hz

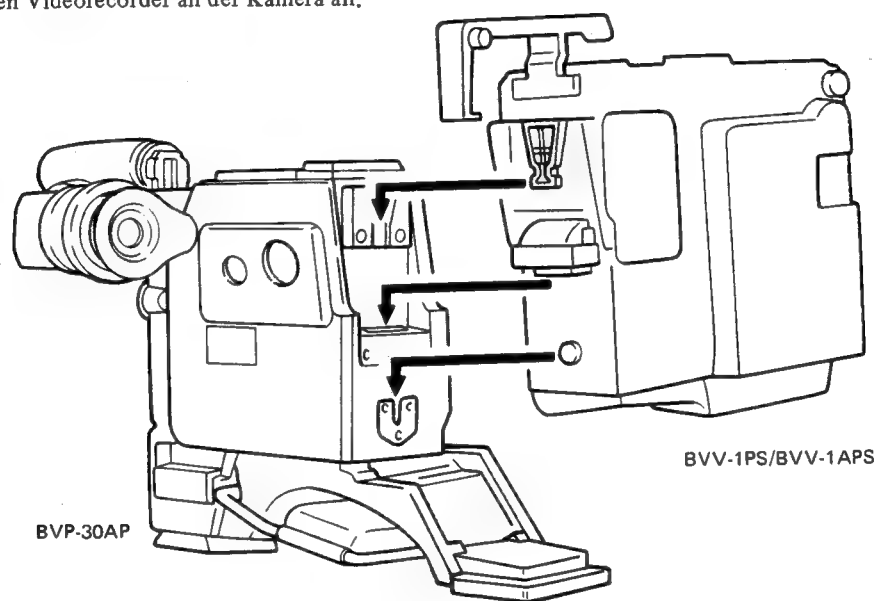
## 1-3. ZUSAMMENBAU

### 1-3-1. Zusammenschluß mit Videorecorder BVV-1PS/BVV-1APS/BVV-5PS

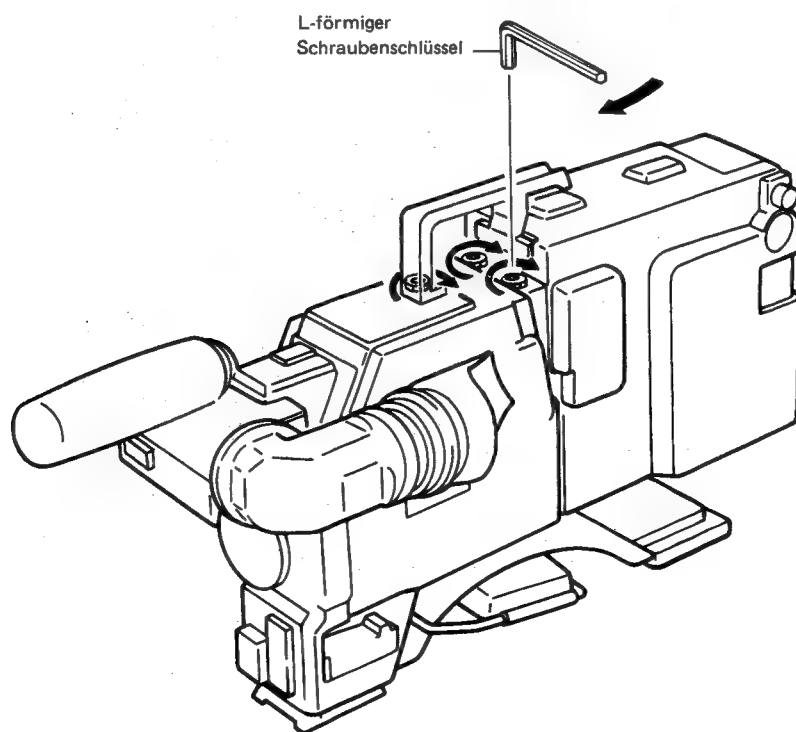
Im folgenden wird beispielhaft der Zusammenschluß der BVP-30AP mit dem tragbaren Videorecorder BVV-1PS/BVV-1APS/BVV-5PS gezeigt. Um die BVP-30AP zusammen mit einem anderen Gerät zu betreiben; lesen Sie bitte die mit dem jeweiligen Gerät mitgelieferte Bedienungsanleitung.

#### Bei Verwendung des Videorecorders BVV-1PS/BVV-1APS

1. Bringen Sie den Videorecorder an der Kamera an.

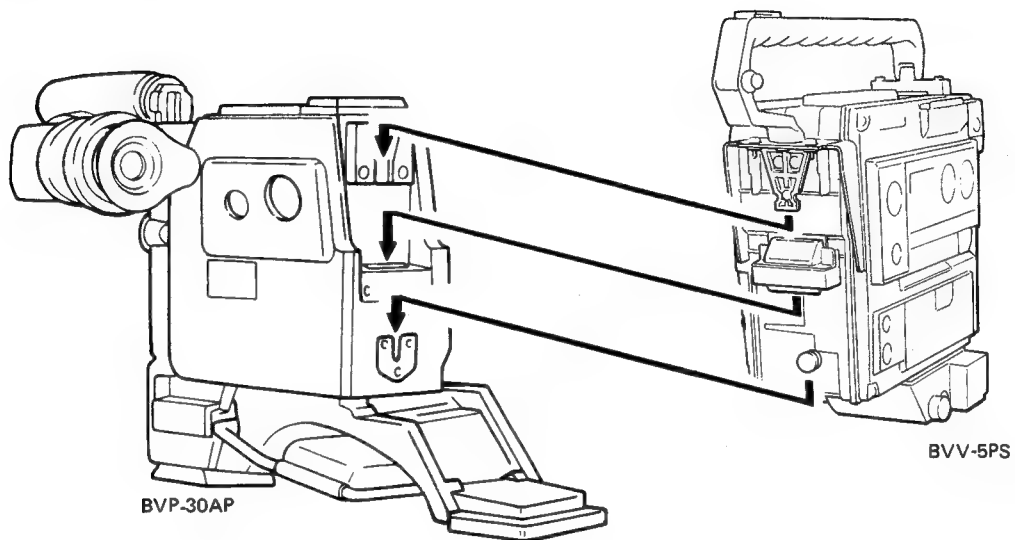


2. Ziehen Sie die Schrauben (beim Videorecorder mitgeliefert) fest.

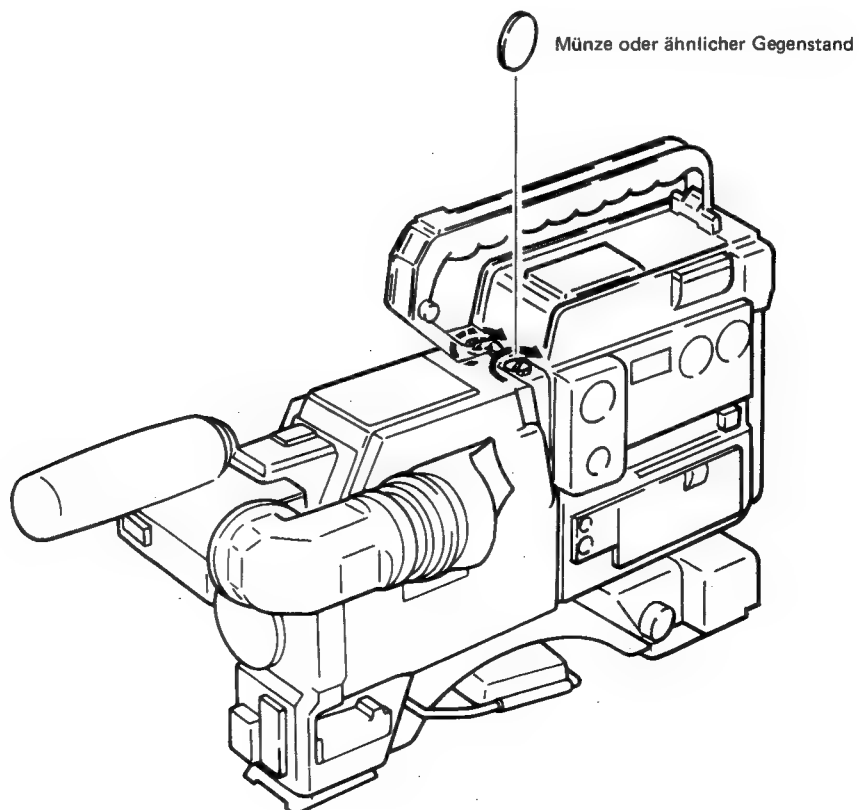


**Bei Verwendung des Videorecorders BVV-5PS**

1. Bringen Sie den Videorecorder an der Kamera an.

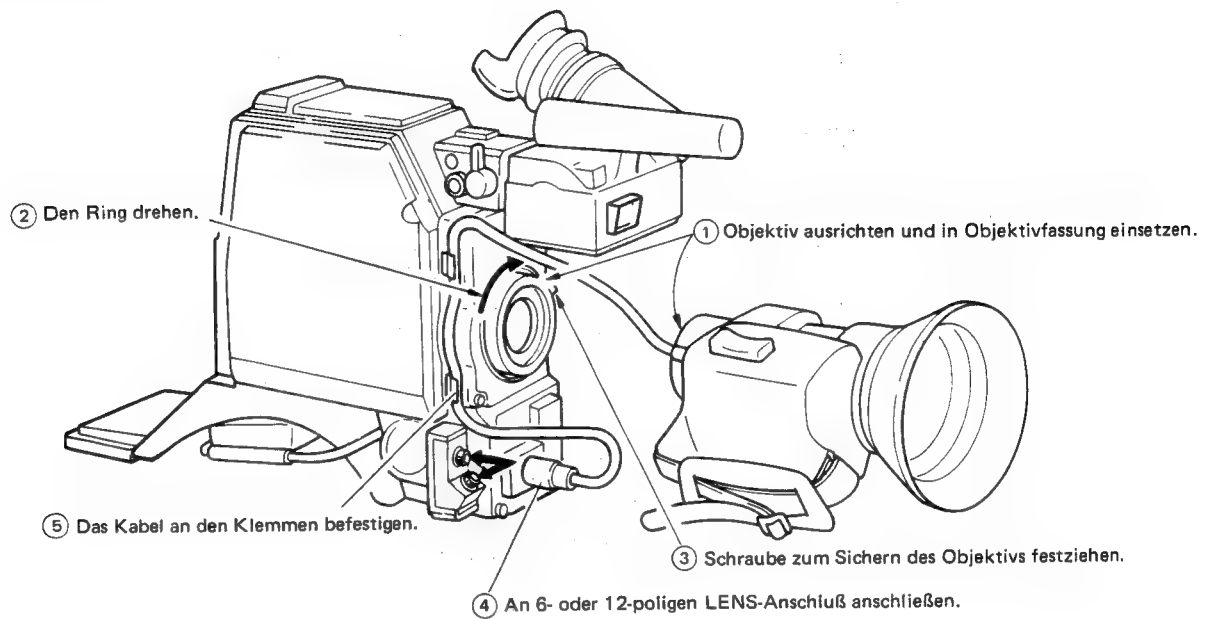


2. Ziehen Sie die Schrauben (beim Videorecorder mitgeliefert) fest.

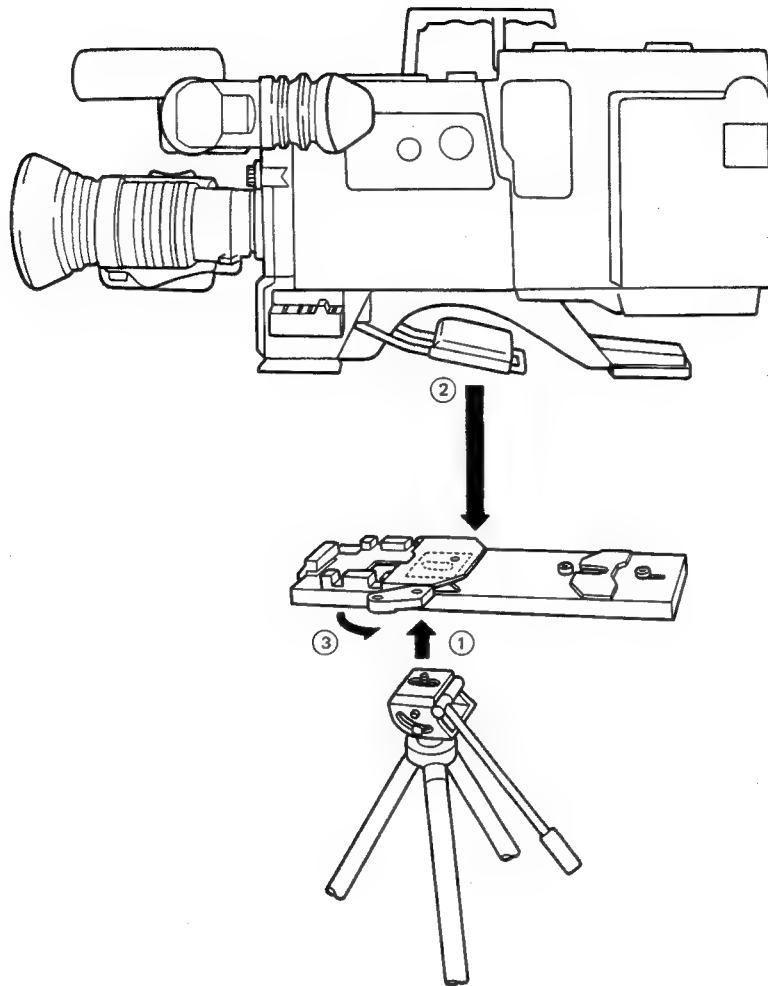


### 1-3-2. Anbringung des Objektivs

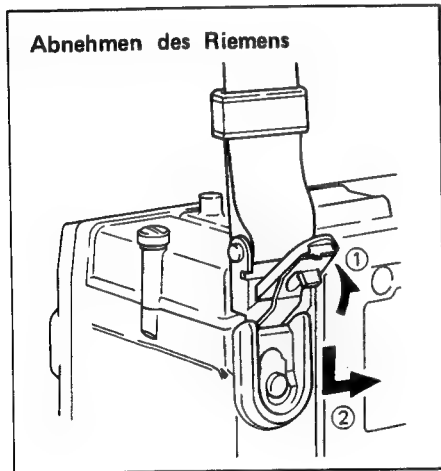
- Genauere Informationen über das Objektiv finden Sie in der mit dem Objektiv mitgelieferten Anleitung.



### 1-3-3. Anbringung eines Stativs



#### 1-3-4. Anbringung des Schulterriemens

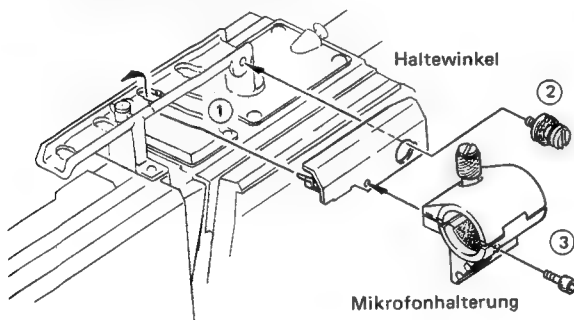


### 1-3-5. Anbringung eines Außenmikrofons

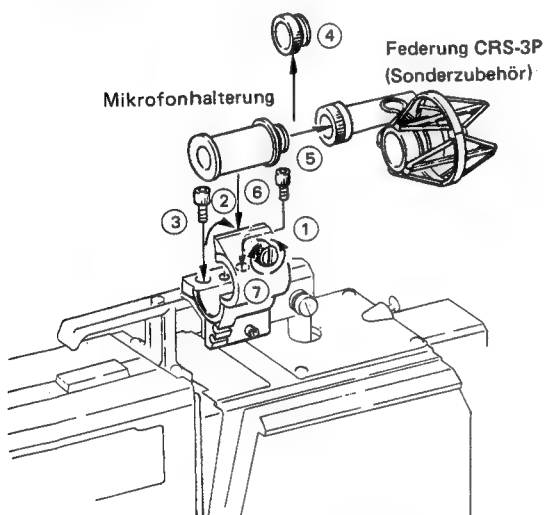
#### Bei Verwendung einer Federung

Wenn eine BVP-30AP mit dem BVV-1PS/BVV-1APS als eine BVW-30AP verwendet wird, bringen Sie ein Mikrofon mit Federung an der Kamera an, und keine störenden Vibrationen vom Videorecorder können zum Mikrofon gelangen.

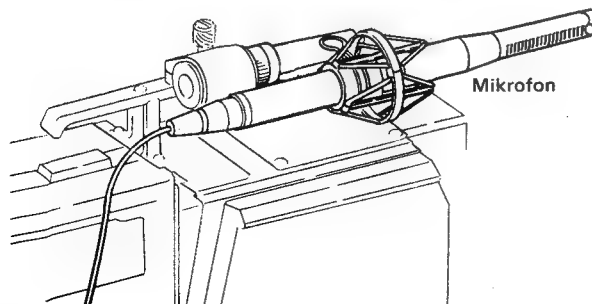
1. Bringen Sie Haltewinkel und Mikrofonhalterung jeweils mit einer Schraube am Griff an.



2. Befestigen Sie die Mikrofonhalterung, klemmen Sie die Federung an dem Halterohr fest und drehen Sie die Schraube zu.



3. Bringen Sie das Mikrofon an der Federung an.

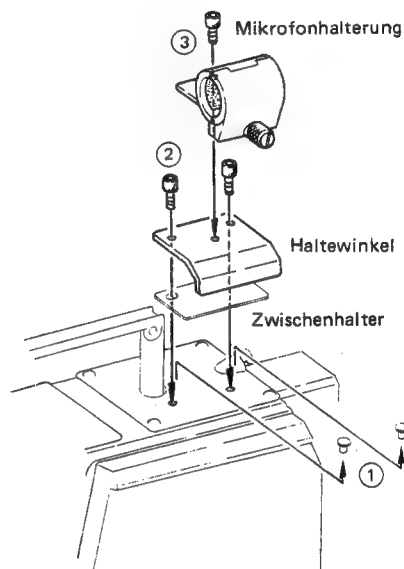


4. Stecken Sie das Mikrofonkabel in den MIC IN-Anschluß des Videorecorders.

#### Wenn keine Federung verwendet wird.

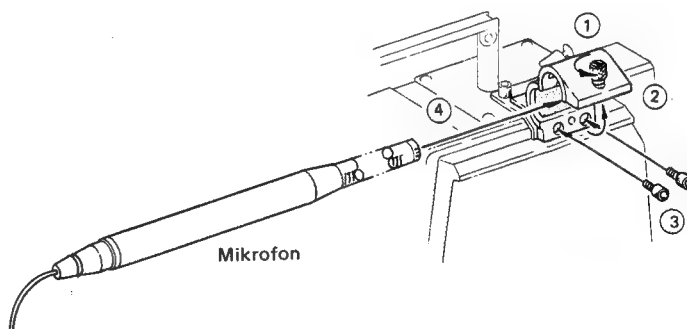
Diese Methode empfiehlt sich nur, wenn die BVP-30AP über den CA-3 oder CA-30P an den Videorecorder angeschlossen wird. Wenn die Kamera dagegen direkt mit einem BVV-1PS/BVV-1APS zusammengeschlossen wird, sollte auf jeden Fall die Federung verwendet werden, da sonst Laufgeräusche von dem Videorecorder mit aufgenommen werden.

1. Nehmen Sie die Kappen an der Kamera ab und bringen Sie Haltewinkel sowie Mikrofonhalterung an der Kamera an.



2. Befestigen Sie die Mikrofonhalterung, klemmen Sie das Mikrofon in der Mikrofonhalterung fest und drehen Sie die Schraube zu.

Ist der Mikrofondurchmesser zu klein, klemmen Sie das Mikrofon im mitgelieferten Adapter ein.



3. Stecken Sie das Mikrofonkabel in den MIC IN-Anschluß am Kameraadapter.

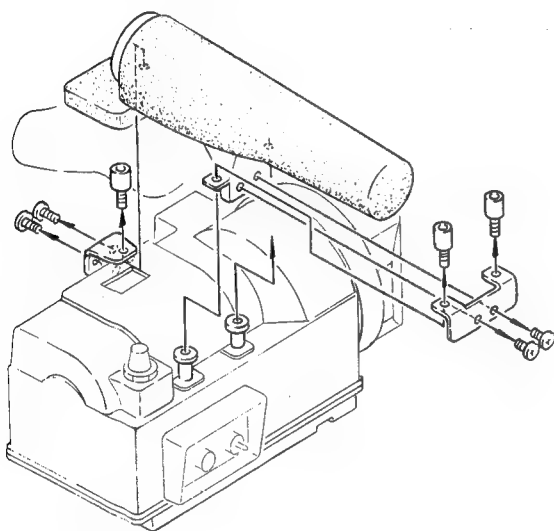


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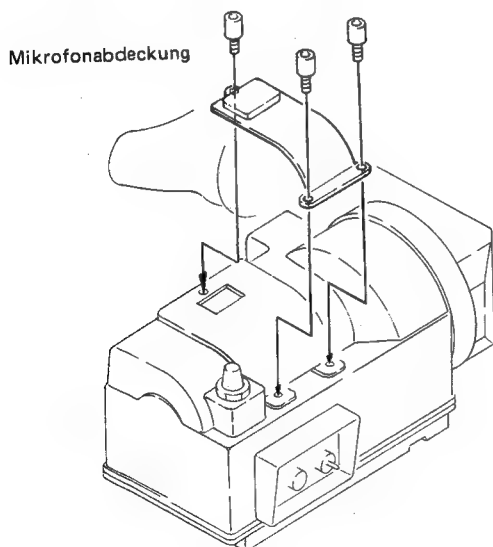
Bei Anschluß eines Außenmikrofons wird das Signal vom eingebauten Mikrofon automatisch abgeschaltet. Das Mikrofon kann wie folgt beschrieben abgenommen werden. Bei abgenommenem Mikrofon bringen Sie die mitgelieferte Abdeckung an.

Der Strom erfolgt von dem Gerät, das am 50-poligen Anschluß an der BVP-30AP angeschlossen ist. Lesen Sie bitte die Bedienungsanleitung des betreffenden Geräts durch.

1. Das eingebaute Mikrofon und den Anschluß abnehmen.



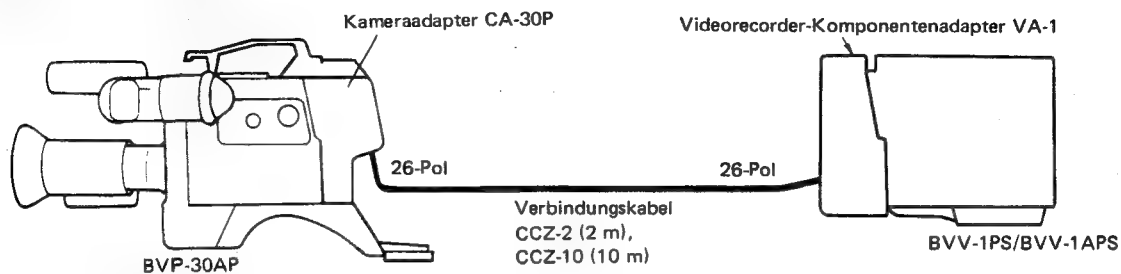
2. Die Mikrofonabdeckung anbringen.



## 1-5. ANSCHLÜSSE

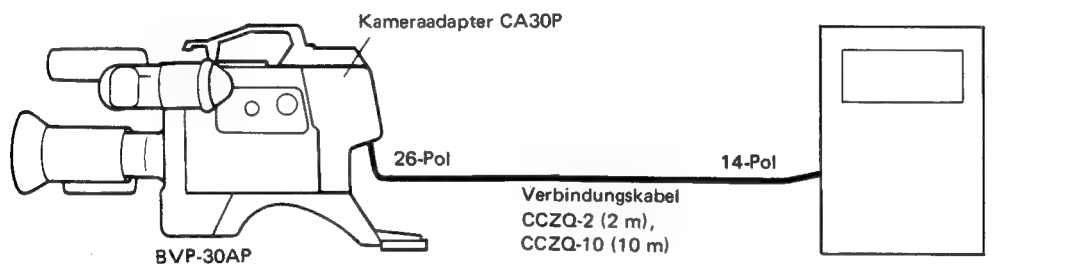
Außer dem direkten Zusammenschluß von BVP-30AP und BVV-1PS/BVV-1APS über die 50-poligen Anschlüsse kann die BVP-30AP auch folgendermaßen verwendet werden:

### Anschluß des BVV-1PS/BVV-1APS unter Verwendung eines Verbindungskabels



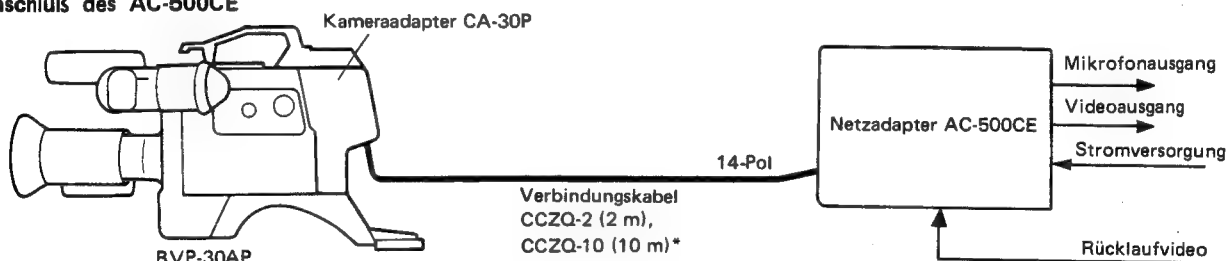
- Der FBAS/Komponenten-Adapter VA-1VP kann auf die gleiche Weise angeschlossen werden.

### Anschluß eines herkömmlichen portablen Videorecorders



- Bei Versorgung der Kamera vom Videorecorder über ein Kamerakabel von mehr als 10 Metern Länge ist die optimale Bildqualität nicht mehr sichergestellt, sobald die BATT-Anzeige im Sucher zu blinken beginnt.

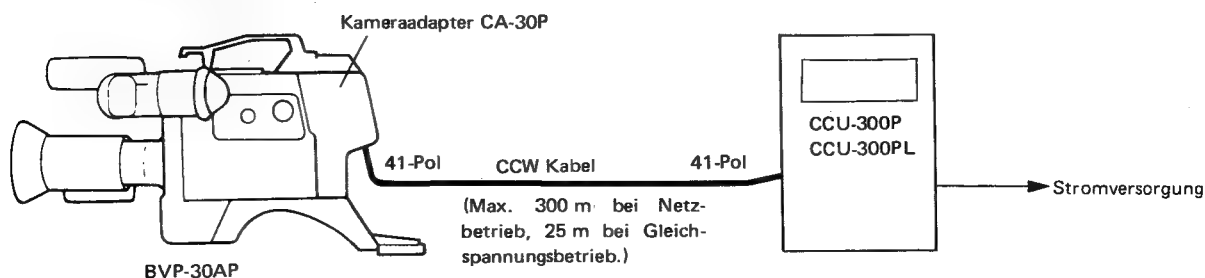
### Anschluß des AC-500CE



- \* Um ausschließlich den Versorgungsstrom an die Kamera zu leiten, verbinden Sie CA-30P und AC-500CE mit einem 4-poligen Kabel.

- Wenn der AC-500CE über ein 4-poliges Kabel mit dem Videorecorder verbunden wird, so wird der Videorecorder mit Strom versorgt.

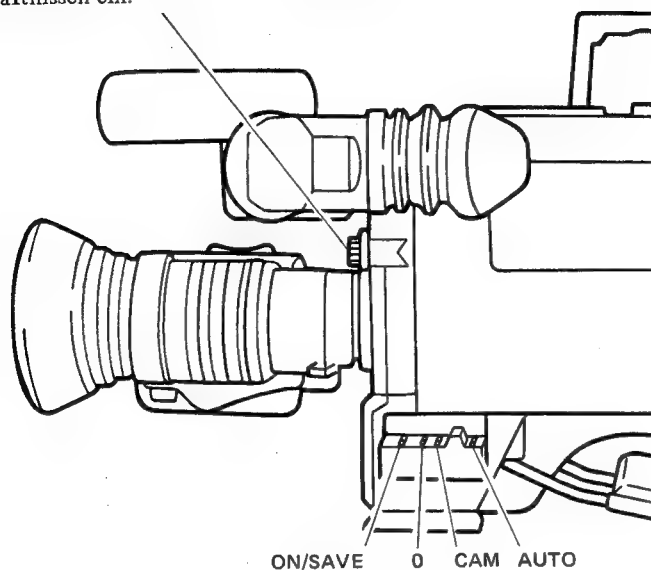
### Anschluß einer CCU-300P/CCU-300PL



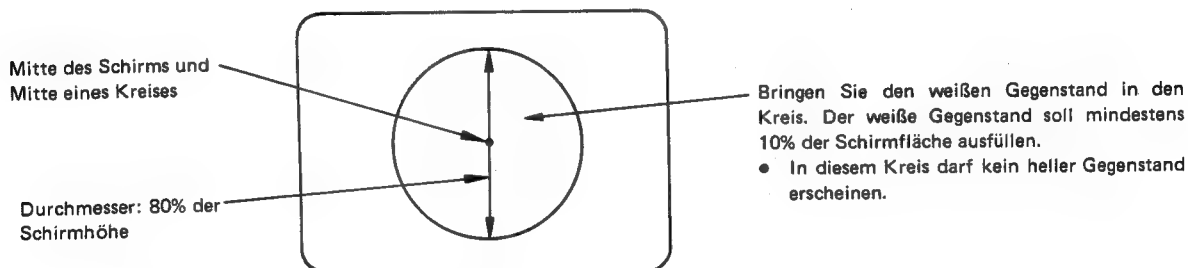
## 1-6. EINSTELLUNGEN

### 1-6-1. Weiß- und Schwarzabgleich

1. Stellen Sie den FILTER-Wähler entsprechend den Lichtverhältnissen ein.



2. Stellen Sie die Schalter folgendermaßen ein.
3. Zoomen Sie unter den gleichen Lichtverhältnissen wie bei der späteren Aufnahme auf das weiße Testbild. Statt des weißen Testbildes kann auch eine andere weiße Fläche wie z.B. ein weißes Tuch oder eine weiße Wand verwendet werden.  
Folgende minimale weiße Fläche ist zur Einstellung erforderlich.



4. Ist eine Automatikblende vorhanden, so stellen Sie den Auto/Manuell-Schalter auf AUTO. Falls nicht, stellen Sie die Blende manuell ein.
5. Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Beim Loslassen kehrt der Schalter automatisch in die Mittelstellung zurück. Nach ca. 5 Sekunden ist der Schwarzabgleich automatisch durchgeführt, und die W/B CENT-Anzeige leuchtet im Sucher auf. Nach ca. 5 Sekunden erlischt die Anzeige wieder. Der eingestellte Wert wird abgespeichert.
  - Wenn der Schalter auf BLK gestellt wird, schließt sich der Verschuß.

6. Stellen Sie den AUTO W/B BAL-Schalter auf WHT. Nach ca. 1 Sekunde ist der Weißabgleich genau wie oben automatisch durchgeführt und der eingestellte Wert wird abgespeichert.

Weiß- und Schwarzabgleich sind damit beendet.

- Sobald die W/B CENT-Anzeige leuchtet, kann mit der nächsten Einstellung begonnen werden. Die Anzeige erlischt, wenn der Schalter in die andere Position gestellt wird, und leuchtet nach Beendigung der Einstellung wieder auf.
- Bei Verwendung eines Zoomobjektivs können Regelschwingungen auftreten. Ändern Sie in diesem Fall die Einstellung des AUTO IRIS GAIN-Reglers am Objektiv. (Genauere Informationen dazu finden Sie in der Bedienungsanleitung des Objektivs.)
- Wenn der AUTO W/B BAL-Schalter auf BLK gestellt wird, so ändert sich automatisch die Einstellung des GAIN-Wählers, und das Sucherbild ist möglicherweise gestört. Dies stellt jedoch kein Problem dar.
- Wenn sich die Beleuchtungsverhältnisse ändern, so führen Sie nur den Weißabgleich neu durch. Eine neue Einstellung des Schwarzabgleichs ist nicht erforderlich.

#### **Wenn die W/B CENT-Anzeige blinkt**

Überprüfen Sie, ob der richtige Filter gewählt wurde, und führen Sie Weiß- und Schwarzabgleich erneut durch.

#### **Wenn der WHITE BAL-Schalter auf PRESET gestellt wird**

In der Stellung „1“ des FILTER-Wählers erhält man einen Weißabgleich für 3200°K. Zum Schwarzabgleich ist lediglich der AUTO W/B BAL-Schalter auf BLK zu stellen.

#### **Abspeichern der Weiß- und Schwarzabgleichwerte**

Schwarz- und Weißabgleichwerte können in der BVP-30AP abgespeichert werden. Es sind vier Memories vorhanden, so daß für jeden Filter ein Weiß- und Schwarzabgleichwert abgespeichert werden kann. Die abgespeicherten Werte bleiben bis ca. eine Woche nach Abschalten der Stromzufuhr bzw., bis eine Neueinstellung durchgeführt wird, erhalten.

- Die eingebauten vier Weißabgleich-Speicher können auf einen Speicher reduziert werden. Öffnen Sie den Widerstand RS-20 an der internen AT-16-Leiterplatte.

## **1-6-2. Schwarzeinstellung**

Mit dem AUTO W/B BAL-Schalter wird die Schwarzeinstellung automatisch mit dem Schwarzabgleich durchgeführt.

Zur manuellen Schwarzeinstellung verwenden Sie den Regler auf der eingebauten Platine. Genauere Informationen finden Sie im Teil 2.

### 1-6-3. Zentrierung

Die R-, G- und B-Aufnahmeröhren werden werkseitig zentriert, so daß normalerweise keine Einstellung erforderlich ist. Sollte dennoch eine Einstellung notwendig werden, so gehen Sie folgendermaßen vor.

Stellen Sie zunächst den Weißabgleich wie unter 1-6-1. beschrieben ein.

1. Stellen Sie den AUTO CENT-Schalter auf MEMORY.
2. Stellen Sie den Blenden-Auto/Manuell-Schalter am Objektiv auf AUTO. Die Blende sollte dabei nicht ganz geöffnet sein. Ist sie ganz geöffnet, so erhöhen Sie die Beleuchtungsstärke.
3. Nehmen Sie das mitgelieferte Testbild oder einen Gegenstand auf.

#### Verwendung des mitgelieferten Testbildes

Richten Sie die Kamera so aus, daß das mitgelieferte Testbild den gesamten Bildschirm füllt.

#### Ohne Verwendung des mitgelieferten Testbildes

Richten Sie die Kameraposition so aus, daß der Gegenstand in einem Kreis liegt, dessen Mittelpunkt sich in der Mitte des Bildschirms befindet und dessen Durchmesser 80% der Bildschirmhöhe beträgt.

- Verwenden Sie einen Gegenstand, der horizontale und vertikale Linien mit geeignetem Kontrast aufweist.
  - Wenn möglich verwenden Sie ein Schwarzweißbild, so daß die R-, G- und B-Pegel nahezu gleich sind. Ist der Gegenstand einfarbig oder ist eine der Farben sehr dunkel, so kann dies zu Zentrierungsfehlern führen.
  - Verwenden Sie keinen sich bewegenden Gegenstand, und bewegen Sie auch die Kamera nicht während der Einstellung.
  - Verwenden Sie keinen Gegenstand mit sehr dünnen Linien, also auch kein Testbild zur Farbdeckungseinstellung.
4. Stellen Sie den AUTO CENT-Schalter auf START. Beim Loslassen kehrt dieser Schalter automatisch in die MEMORY-Stellung zurück. Nach ca. 10 Sekunden ist die Zentrierung automatisch eingestellt, und im Sucher leuchtet die W/B CENT-Anzeige auf. Die Anzeige erlischt nach ca. 5 Sekunden wieder.
    - Während die Zentrierung durchgeführt wird, wird die Schärfenanhebung ausgeschaltet und die in einem Kreis mit einem Durchmesser von 70% der Bildschirmhöhe liegenden Kanten werden schärfer abgebildet.

5. Führen Sie den Weißabgleich erneut durch, da Zentrierungsfehler den Weißabgleich beeinflussen können.

#### Wenn die W/B CENT-Anzeige blinkt

Es wurde ein ungeeigneter Testgegenstand verwendet oder ...

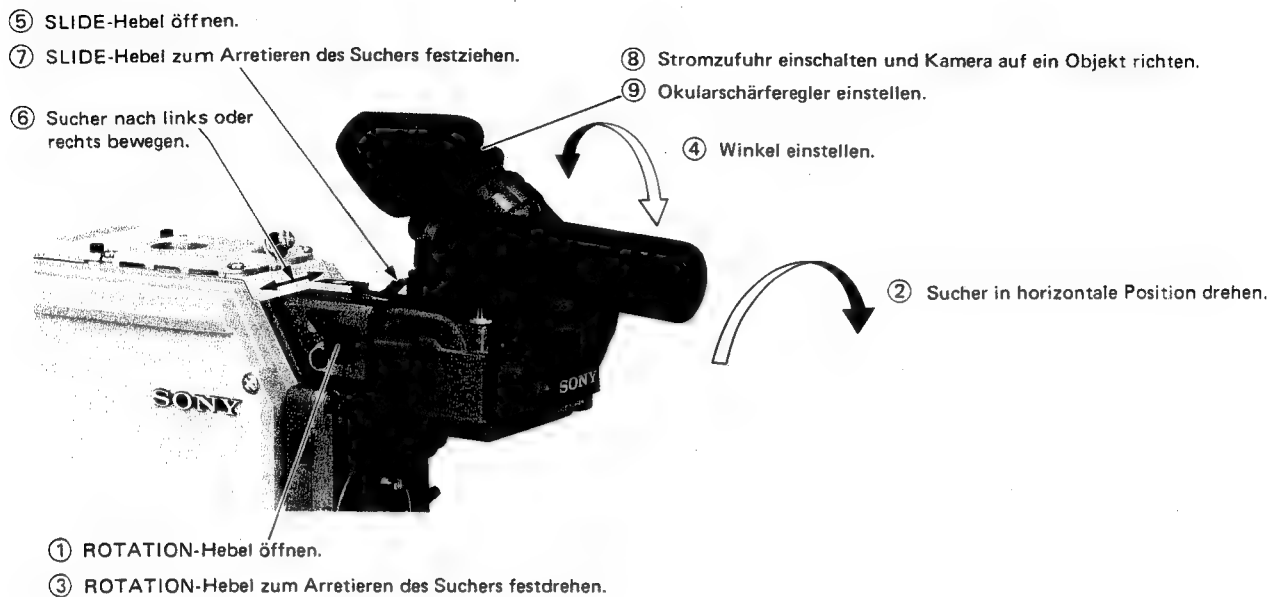
- der Gegenstand besitzt nicht genug Kanten und nicht genug Kontrast.
- die Blende ist falsch eingestellt.
- der Gegenstand ist nicht scharfgestellt.
- der Gegenstand hat sich während der Einstellung bewegt.
- der Zentrierungsbereich wurde überschritten.

Stellen Sie die Ursache fest, und nehmen Sie den Abgleich erneut vor.

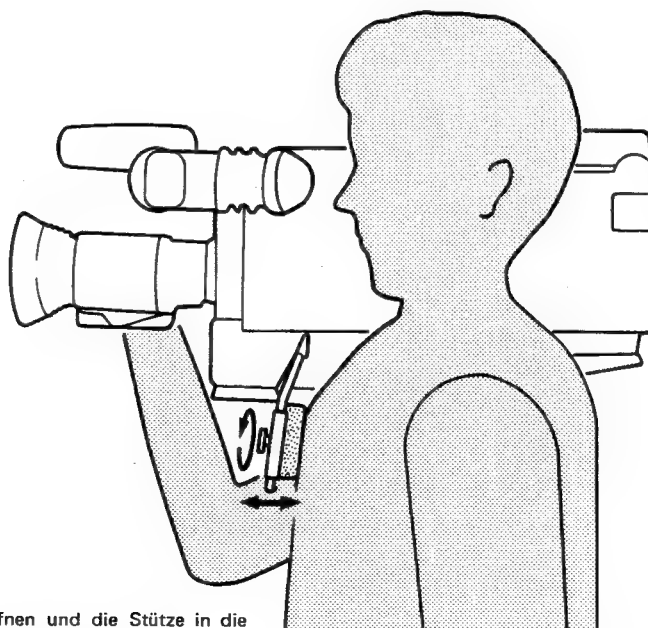
#### Abspeichern des Zentrierungswertes

Der eingestellte Zentrierungswert kann genau wie die Weiß- und Schwarzabgleichwerte gespeichert werden, wobei die Speicherung noch ca. eine Woche nach Abschalten der Stromzufuhr erhalten bleibt. Wenn dieser Zeitraum überschritten wird, erhält man im Memory den werkseitig voreingestellten Wert.

#### 1-6-4. Suchereinstellungen



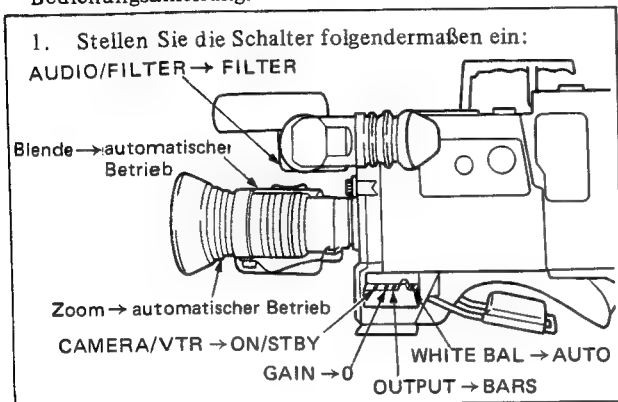
#### 1-6-5. Ausrichten der Stütze



Schraube öffnen und die Stütze in die optimale Lage bringen.

## 1-7. FUNKTIONSKONTROLLEN

- Im folgenden wird ein Bedienungsbeispiel gegeben. Genauere Informationen zur Bedienung des Objektivs finden Sie in der mit dem Objektiv mitgelieferten Bedienungsanleitung.



2. Stellen Sie den Sucher ein.

3. Vergewissern Sie sich, daß die Farbbalken auf dem Sucherschirm erscheinen.

4. Stellen Sie den BRIGHT- und CONTR-Regler so ein, daß die Farbbalken auf dem Sucherschirm klar abgebildet werden.

5. Wechseln Sie die FILTER-Wählereinstellung von 1 → 2 → 3 → 4, und überprüfen Sie, ob der richtige Wert im Sucher angezeigt wird.

6. Stellen Sie den OUTPUT-Wähler auf CAM.

7. Richten Sie die Kamera auf ein Motiv.

8. Stellen Sie das Motiv durch Drehen des Fokussierings scharf ein. Überprüfen Sie, ob das Bild auf dem Sucherschirm erscheint.

9. Überprüfen Sie das Motorzoom.

10. Stellen Sie das Zoom auf manuellen Betrieb.

11. Überprüfen Sie das manuelle Zoomen.

12. Stellen Sie das Zoom auf automatischen Betrieb.

13. Richten Sie die Kamera auf Motive unter verschiedenen Helligkeitsniveaus und überprüfen Sie, ob die automatische Blendeneinstellung funktioniert.\*

14. Stellen Sie die Blende auf manuellen Betrieb.

15. Drehen Sie den Blendenring, um die manuelle Blendeneinstellung zu überprüfen.

16. Drücken Sie die Sofort-Auto-Taste und halten Sie sie in gedrückter Stellung, um kurz auf automatische Blendeneinstellung zu schalten. Richten Sie die Kamera auf Motive unter verschiedenen Helligkeitsniveaus, um die Einstellung zu überprüfen.

17. Stellen Sie die Blende auf automatischen Betrieb.

18. Stellen Sie den GAIN-Wähler auf 9, dann auf 18. Überprüfen Sie, ob sich die Blende jeweils um eine Stufe schließt und ob die GAIN UP-Anzeige leuchtet.

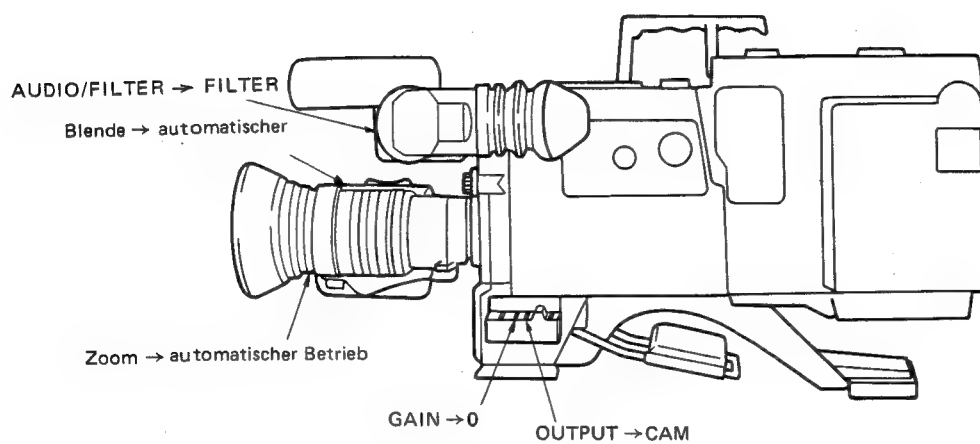
19. Stellen Sie den GAIN-Wähler auf 0.

\* Bei Verwendung eines Objektivs mit 6-poligem Anschluß können Regelschwingungen auftreten. Stellen Sie in diesem Fall den AUTO IRIS GAIN-Regler am Objektiv ein. (Genauere Informationen finden Sie in der Bedienungsanleitung des Objektivs.)

## 1-8. BETRIEB

### 1-8-1. Vorbereitung

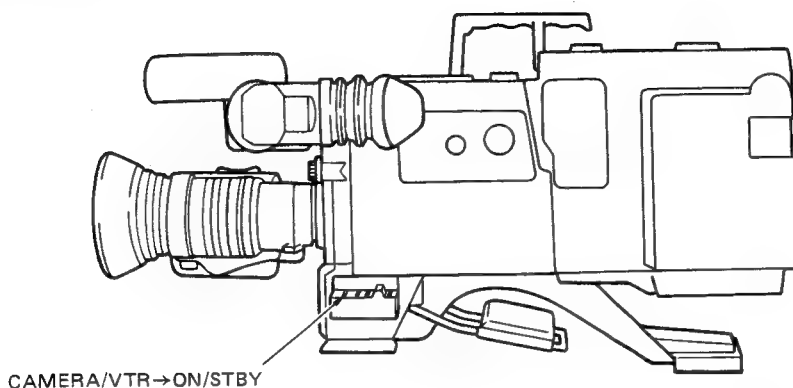
Stellen Sie die Schalter vor dem Betrieb folgendermaßen ein:





## 1-8-2. Kameraaufnahme

1. Schalten Sie die Kamera und die anderen Geräte



2. Setzen Sie eine Cassette ein.
3. Wählen Sie den entsprechenden Filter.
4. Stellen Sie den Weiß- und Schwarzabgleichwert ein.  
**Wenn der Weiß- und Schwarzabgleichwert gespeichert ist,**  
stellen Sie den WHITE BAL-Schalter auf AUTO.  
**Wenn der Weiß- und Schwarzabgleichwert nicht gespeichert ist, Sie jedoch schnell mit der Aufnahme beginnen wollen,**  
stellen Sie den WHITE BAL-Schalter auf PRESET und den AUTO W/B BAL-Schalter auf BLK. Man erhält dann einen Weiß- und Schwarzabgleich für 3200°K.

### Durchführung des Weiß- und Schwarzabgleichs

- ① Stellen Sie den WHITE BAL-Schalter auf AUTO.
  - ② Richten Sie die Kamera auf einen weißen Gegenstand.
  - ③ Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Sobald die W/B CENT-Anzeige im Sucher aufleuchtet, ist der Schwarzabgleich durchgeführt.
  - ④ Stellen Sie den AUTO W/B BAL-Schalter auf WHT. Sobald die W/B CENT-Anzeige im Sucher aufleuchtet, ist der Weißabgleich durchgeführt.
- Genauere Informationen finden Sie unter „1-6-1. Weiß- und Schwarzabgleich“.
5. Richten Sie die Kamera auf das Motiv und stellen Sie Schärfe und Zoom ein.
  6. Drücken Sie die VTR-Taste, um mit der Aufnahme zu beginnen. Die REC-Anzeige im Sucher leuchtet während der Aufnahme.
  7. Um die Aufnahme zu beenden, drücken Sie die VTR-Taste erneut.

### Aufnahme bei schwacher Beleuchtung

Wenn die Beleuchtung so schwach ist, daß man bei normaler Einstellung kein klares Bild erhält, stellen Sie den GAIN-Schalter auf „9“ oder „18“. In der Position 9 des GAIN-Schalters wird der Videoausgangspegel um 9 dB und in der Position 18 um 18 dB erhöht.

- Normalerweise ist der Wähler auf „0“ zu stellen.

### Überprüfung des Videopegels

Ein Streifenmuster erscheint an der Stelle des Sucherbildschirms, an der der Videopegel des Bildes 70% (IRE Einheit) beträgt. Dies stellt eine Hilfe bei der manuellen Blendeneinstellung dar.

Das Zebromuster kann am TALLY/ZEBRA ON/OFF-Schalter abgeschaltet werden. Dies ist jedoch nicht möglich, wenn ein spezieller Schalter an einer internen Leiterplatte auf OFF gestellt wird. Genauere Informationen dazu finden Sie im Teil 2.

## **1-9. VORSICHTSMASSNAHMEN**

### **Die Kamera nie direkt gegen die Sonne halten.**

Wenn man die Kamera direkt gegen die Sonne hält oder auf eine andere starke Lichtquelle richtet, kann die Aufnahme-  
röhre beschädigt werden. Durch Daueraufnahmen von hell  
beleuchteten Motiven kann die Aufnahmeröhre ebenfalls  
Schaden nehmen. Falls Aufnahmen bei heller Beleuchtung  
gemacht werden müssen, schließen Sie die Blende soweit  
wie möglich.

### **Gehen Sie sorgsam mit der Kamera um und vermeiden Sie Erschütterungen.**

#### **Nach dem Gebrauch der Kamera**

Den Strom des an die Kamera angeschlossenen Gerätes ab-  
schalten.

#### **Betriebsumgebung und Aufbewahrungsplatz**

Betreiben Sie die Kamera nicht an den nachstehend aufge-  
führten Plätzen, und bewahren Sie sie dort auch nicht auf:

Extrem heiße oder feuchte Plätze (die Betriebstemperatur  
reicht von  $-20^{\circ}\text{C}$  bis  $+40^{\circ}\text{C}$ )

Plätze, an denen die Kamera direkter Sonnenbestrahlung,  
übermäßig viel Staub und Erschütterungen ausgesetzt ist.

Plätze, an denen die Kamera starken Magnetfeldern  
ausgesetzt ist.

Bewahren Sie die Kamera waagrecht liegend auf und sorgen  
Sie für ausreichende Luftzufuhr.

#### **Reinigen Sie das Sucherobjektiv mit einer handelsüblichen Objektiv-Reinigungsflüssigkeit.**

Verwenden Sie keine Lösemittel wie Alkohol, Benzin oder  
Verdünner.

## 1-10. TECHNISCHE DATEN

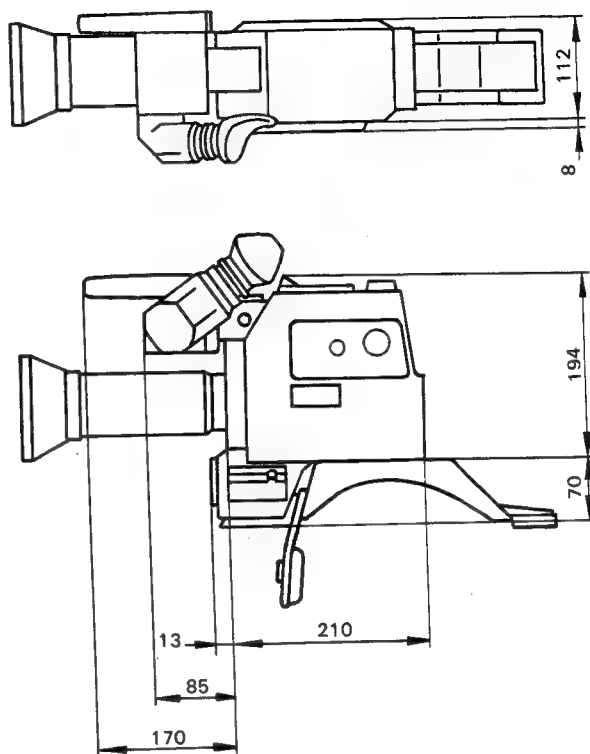
### Kamera

Aufnahmeröhre	2/3" Plumbicon (magnetische Fokussierung, statische Ablenkung)
System	3-Röhren RGB-System (mit Quarzfilter)
Spektralsystem	f 1,4 Prismensystem
Eingebaute Filter	1: 3200°K 2: 5600°K + 1/4ND 3: 5600°K 4: 5600°K + 1/16ND
Objektivbefestigung	Spezial-Bajonettverschluß
Videoausgang	PAL 1,0 Vss, 75 Ohm, unsymmetrisch, Video positiv, zwei Ausgänge (TEST OUT, VTR)
Anschlüsse	VTR: 50-pol (Videoausgang, Mikrofonausgang, Sync-Ausgang, Stromversorgungsseingang) TEST OUT: BNC-Buchse LENS: 6-pol, 12-pol REMOTE: 6-pol
Empfindlichkeit	2000 Lux mit f4,5 (typisch), 89,9% Refl.
Minimaler Objektbeleuchtung	25 Lux (f 1,4 + 18 dB Verstärkung)
Video Signal-Rauschabstand	57 dB (typisch)
Horizontale Auflösung	650 (Mitte)
Farbdeckung	0,1% in Zone I (in einem Kreis, der einen Durchmesser von 80% der Bildhöhe besitzt) 0,15% in Zone II (in einem Kreis, dessen Durchmesser gleich der Bildhöhe ist) 0,3% in Zone III (sonstiger Bereich)
Geometrische Verzerrungen	Weniger als 1%
Stromversorgung	12V Gleichspannung (10,5 bis 17V)
Leistungsaufnahme	24W
Warmlaufzeit	ca. 3,5 Sekunden vom Vorheizbetrieb
Betriebstemperatur	-20°C bis +50°C
Aufbewahrungstemperatur	-20°C bis +60°C
Gewicht	46 kg mit Sucher

Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.

### Abmessungen

Einheit: mm



### Sucher

Bildröhre	1,5" -Monochrom Helligkeitsregler, Kontrastregler, Signallampen/Zebrawuster-Ein/Ausschalter, Konturenanhebungsschalter, AUDIO/FILTER-Schalter, Aufnahmepegelregler für Tonkanal 1
Auflösung	500 Fernsehzeilen
Mikrofon	Starke Richtwirkung

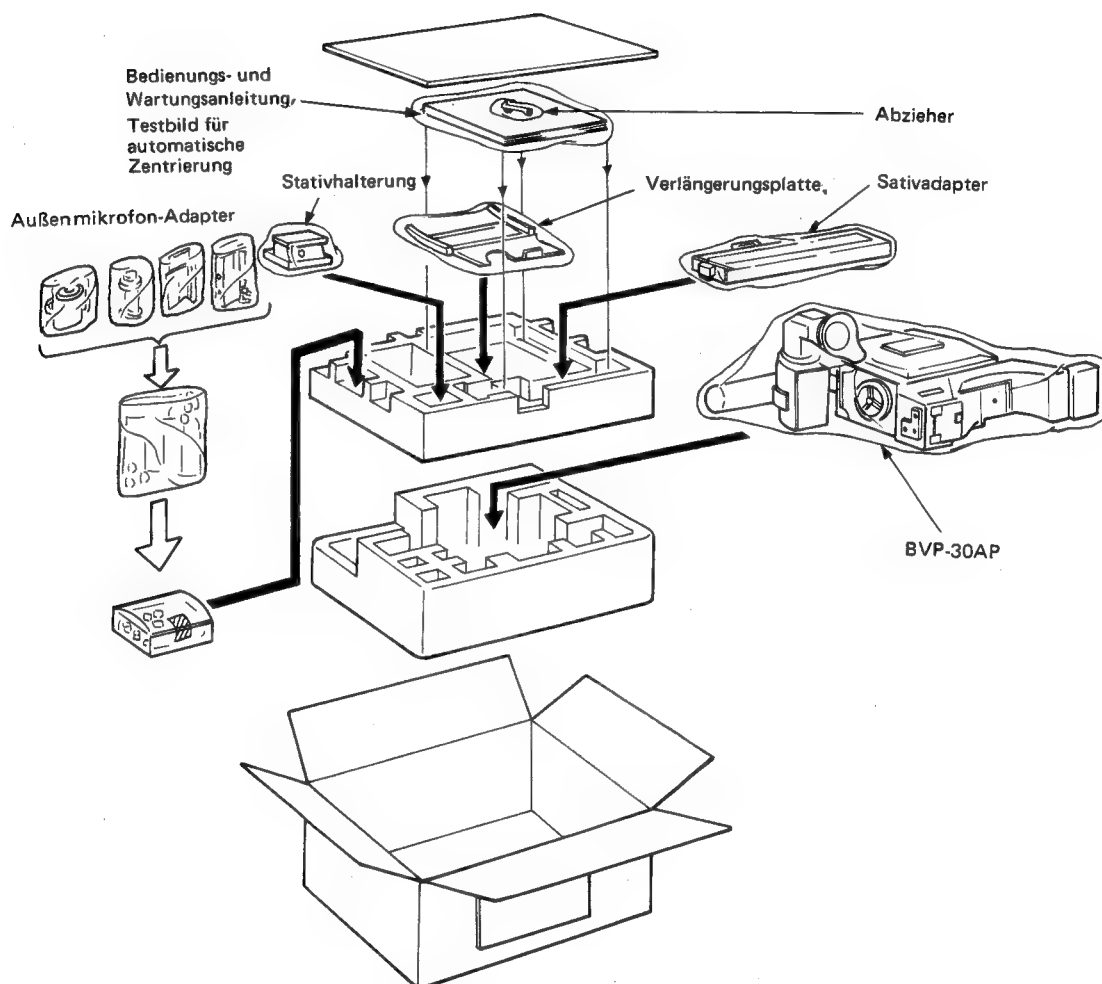
### Mitgeliefertes Zubehör

Stativadapter	x1
Stativhalterung	x1
Verlängerungsplatte	x1
Abzieher	x1
Testbild für automatische Zentrierung	x1
Außenmikrofon-Adapter	x1

### Empfohlene Geräte

Portabler Videorecorder	BVV-1PS/BVV-1APS
Kameraadapter	CA-3, CA-30P
Netzadapter	AC-500CE
Fernbedieneinheit	RM-P3
Videomonitor	BVF-50

## 1-11. VERPACKEN DER BVP-30AP



## **1-12. BEDIENUNG DES BETACAM-SYSTEMS BVW-30AP**

### **1-12-1. Merkmale**

#### **Kompakt und leicht**

Kamera BVP-30AP, Videorecorder BVV-1PS/BVV-1APS, Batterie und Cassette wiegen zusammen nur etwa 10 kg.

#### **Kabelloses System**

Kamera, Videorecorder, Sucher, Batterie, Mikrofon usw. werden ohne irgendwelche Kabel miteinander verbunden.

#### **Geringe Leistungsaufnahme**

Die Leistungsaufnahme ist so gering, daß eine einzige Akkubatterie NP-1 bei einem Zusammenschluß mit dem BVV-1PS/BVV-1APS einen Betrieb von ca. 30 Minuten ermöglicht.

#### **Video- und Audio-Hinterbandkontrolle**

Das Video- und Audio-Hinterbandkontrollsystem ermöglicht das Überprüfen des Aufnahmebildes und -tons.

#### **Qualitativ hochwertiges Bild**

Das neu entwickelte Aufnahmesystem mit einer 1/2-Zoll-Cassette hat die Bildqualität wesentlich verbessert und kommt nun an die des 1-Zoll-Video-recorderbildes heran. Die drei Plumbicon-Aufnahmeröhren mit der magnetischen Fokussierung und statischen Ablenkung gewährleisten eine hochwertige Bildqualität.

#### **Eingebauter Zeitcodegenerator**

Ein eingebauter Zeitcodegenerator gestattet die gleichzeitige Aufnahme des Zeitcodes während des Betriebs. Das Benutzer-Bit kann ebenfalls aufgezeichnet werden.

#### **Unabhängige Zeitcode-Spur**

Die Zeitcode-Spur ist von der Video-Spur getrennt, so daß Zeitcodeaufnahme und Löschen mit einem Schnitt-Steuergerät möglich sind.

#### **Zwei Tonkanäle**

Der Ton vom eingebauten Mikrofon oder von Außenmikrofonen bzw. von anderen Tonquellen kann auf zwei Tonkanäle getrennt aufgenommen werden.

#### **Zusammenfügen von Einzelszenen**

Dank einer speziellen Vertikalintervall-Timing-Einrichtung können einzelne Aufnahmeszenen mit störungsfreien Schnittstellen aneinandergefügt werden.

#### **Warnsystem**

Bei Betriebsstörungen leuchten Warnanzeigen auf, und ein Warnton ist sowohl über den Lautsprecher als auch über den Ohrhörer zu hören.

#### **Anzeige für verbleibende Aufnahmezeit**

Die noch verbleibende Aufnahmezeit wird im Sucher angezeigt.

### **Verwendung des Drahtlos-Mikrofonsystems**

Ein Empfänger aus dem Sony Drahtlos-Mikrofonsystem kann angebracht werden.

### **Zusätzliche Akkubatterie**

Zusammen mit der im Batteriefach der BVV-1PS/BVV-1APS eingesetzten Akkubatterie kann eine weitere Akkubatterie verwendet werden.

### **Dolby\*-C Rauschverminderungssystem für bessere Tonqualität**

Das in diesem Gerät verwendete neuentwickelte Dolby-C Rauschverminderungssystem liefert einen besseren Signal-Rauschabstand und einen größeren Dynamikbereich. Zum Einschalten des Dolby-Schaltkreises siehe Abschnitt 2 der BVV-1PS/BVV-1APS Bedienungsanleitung.

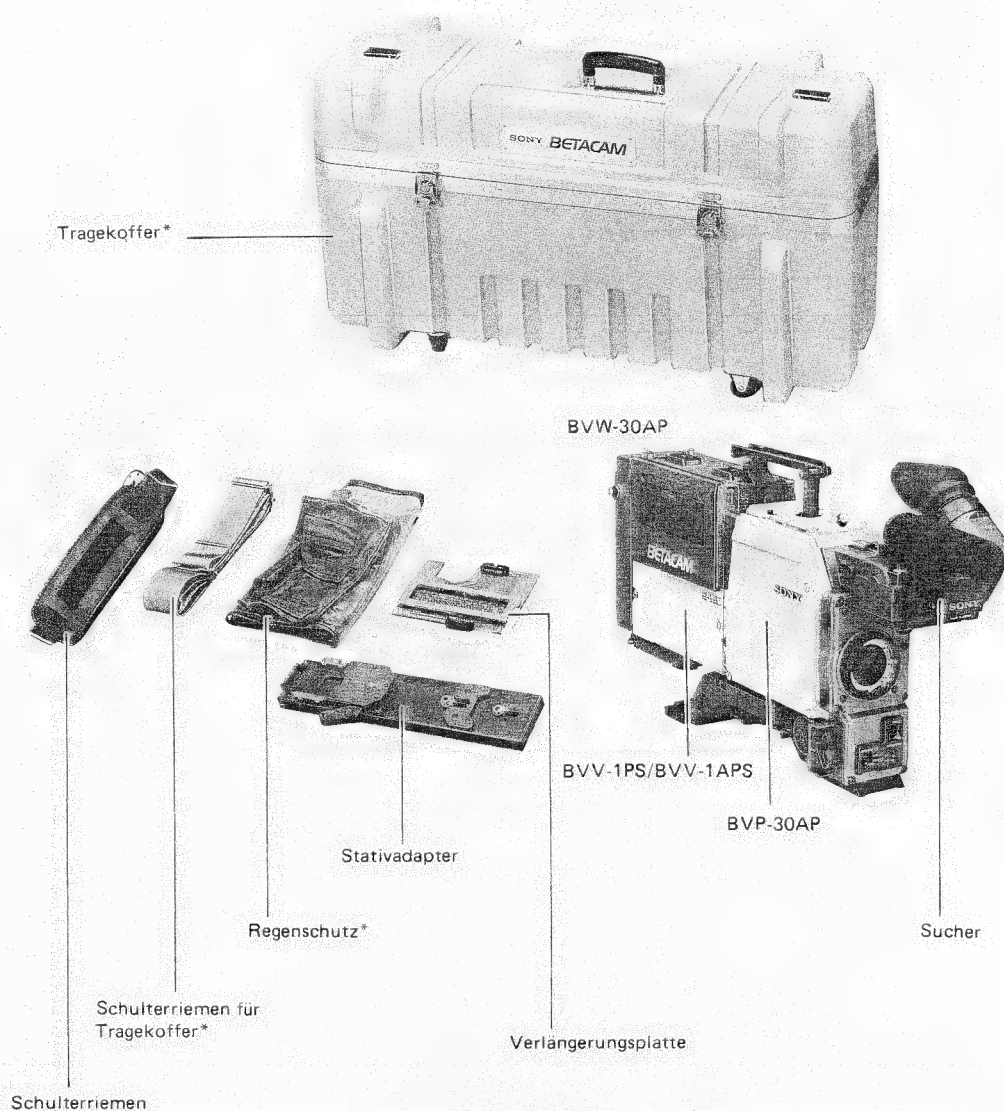
\* „Dolby“ und das Doppel-D-Symbol sind Warenzeichen der Dolby Laboratories Licensing Corporation. Das Dolby-Rauschverminderungssystem wird unter Lizenz der Dolby Licensing Corporation hergestellt.

### **Hinweis**

Mit einem BVV-1PS der Serien-Nr. 49999 oder niedriger arbeiten die folgenden Funktionen der BVW-30AP nicht.

- Tonpegelanzeige im Sucher.
- AufnahmepegelEinstellung von Tonkanal 1.

## 1-12-2. Bestandteile des BVW-30AP



Batteriefachdeckelschnur  
 Testbild für automatische Zentrierungseinstellung  
 Außenmikrofon-Adapter  
 Abzieher  
 50-Pol Kappen  
 Zeitcodekabel  
 6-Pol-Anschluß

\* Tragekoffer, Schulterriemen für Tragekoffer und Regenschutz werden mit dem Betacam-System BVW-30AP mitgeliefert. Bei getrenntem Kauf des Video-recorders BVV-1PS/BVV-1APS und der Kamera BVP-30AP werden diese Teile nicht mitgeliefert. Ihr Sony Händler gibt Ihnen gerne genauere Auskünfte bezüglich dieser Teile.

### 1-12-3. Kontrollroutinen

Vor der Aufnahme empfehlen wir Ihnen, die folgenden Prüfungspunkte durchzugehen, um sicherzustellen, daß das Betacam-System einwandfrei funktioniert. Verwenden Sie hierbei zur Bildkontrolle einen Farbmonitor.

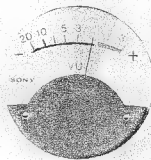
#### 1. Vorbereitung

1. Setzen Sie eine voll aufgeladene Akkubatterie ein.

2. POWER-Schalter → ON

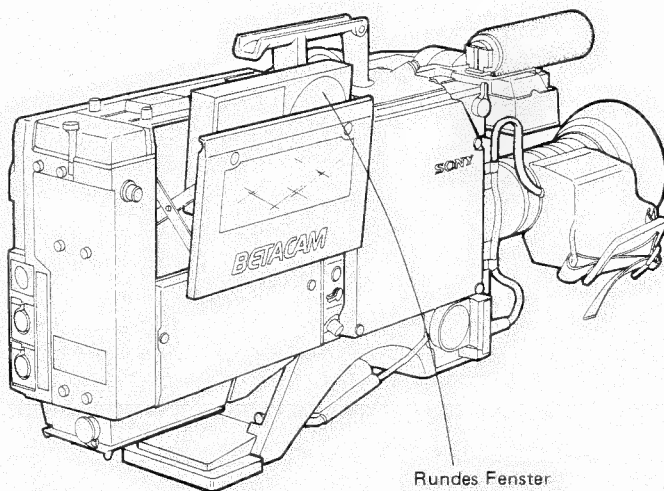
3. Die HUMID-Lampe darf nicht leuchten.

4. Überprüfen Sie die Batterie.  
Stellen Sie den METER SELECT-Schalter auf BATT und überprüfen Sie, ob der Instrumenten-  
zeiger in die grüne Zone ausschlägt.



5. Falls erforderlich stellen Sie Zeitcode oder  
Benutzer-Bit ein.

6. Setzen Sie eine Cassette ein.

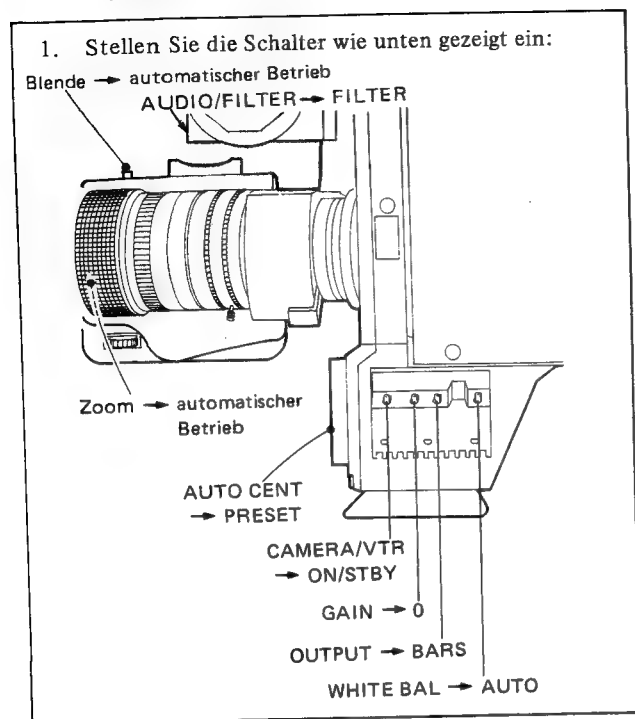


Rundes Fenster

- Stellen Sie sicher, daß die Löchsperre unten an der Cassette vorhanden ist.



## 2. Überprüfen der Kamera



2. Richten Sie den Sucher aus.

3. Überprüfen Sie, ob die Farbbalken im Sucher erscheinen.

4. Stellen Sie den BRIGHT- und den CONTR-Regler am Sucher so ein, daß die Farbbalken auf dem Sucherschirm klar zu sehen sind.

5. Stellen Sie den FILTER-Wähler nacheinander auf 1 → 2 → 3 → 4, und überprüfen Sie, ob der richtige Wert im Sucher angezeigt wird.

6. Stellen Sie den OUTPUT-Wähler auf CAM.

7. Richten Sie die Kamera auf ein geeignetes Motiv.

8. Drehen Sie den Fokusserring so, daß das Motiv scharf ist. Überprüfen Sie, ob das Motiv auf dem Sucherschirm erscheint.

9. Überprüfen Sie den Motorzoombetrieb. Durch Drücken der Motorzoom-Taste kann vom Weitwinkel- in den Telebereich gefahren werden und umgekehrt.

10. Stellen Sie das Zoom auf manuellen Betrieb.

11. Überprüfen Sie den manuellen Zoombetrieb. Durch Drehen des Zoomhebels kann vom Weitwinkel- in den Telebereich gefahren werden und umgekehrt.

12. Stellen Sie das Zoom auf automatischen Betrieb.

13. Richten Sie die Kamera auf Motive mit unterschiedlichen Helligkeitsniveaus und überprüfen Sie, ob die Blendensystematik funktioniert.\*

14. Stellen Sie die Blende auf manuellen Betrieb.

15. Drehen Sie den Blendenring und überprüfen Sie, ob sich die Blende ändert.

16. Drücken Sie die Sofort-Auto-Taste und halten Sie sie gedrückt, um kurz auf automatische Blendeneinstellung zu schalten. Richten Sie die Kamera auf Motive mit verschiedenen Helligkeitsniveaus, um die Einstellung zu überprüfen.

17. Stellen Sie die Blende auf automatischen Betrieb.

18. Stellen Sie den GAIN-Schalter auf 6, dann auf 12. Überprüfen Sie, ob die Blende jeweils um eine Stufe schließt und die GAIN UP-Anzeige im Sucher leuchtet.

19. Stellen Sie den GAIN-Wähler auf 0.

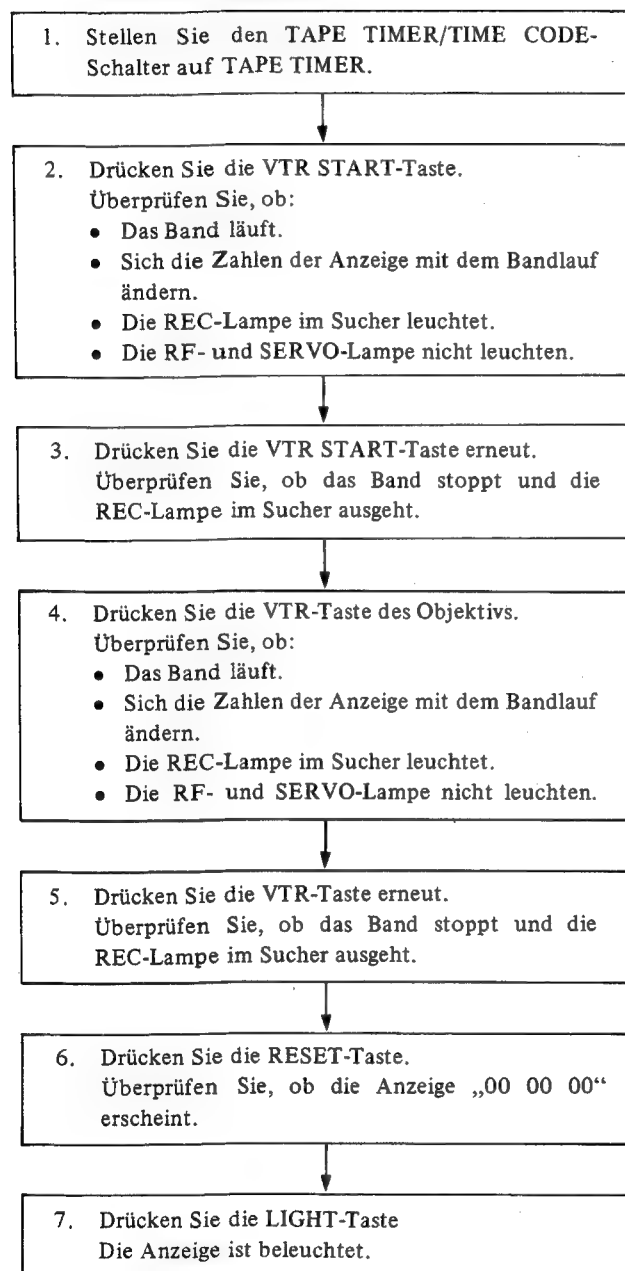
20. Stellen Sie den AUDIO/FILTER-Schalter auf AUDIO. Überprüfen Sie, daß die FILTER/AUDIO-Anzeige den Tonpegel anzeigt.

\* Bei Verwendung eines Objektivs mit 6-poligem Anschluß können Regelschwingungen auftreten. Stellen Sie in diesem Fall den AUTO IRIS GAIN-Regler am Objektiv ein. (Genauere Informationen finden Sie in der Bedienungsanleitung des Objektivs.)

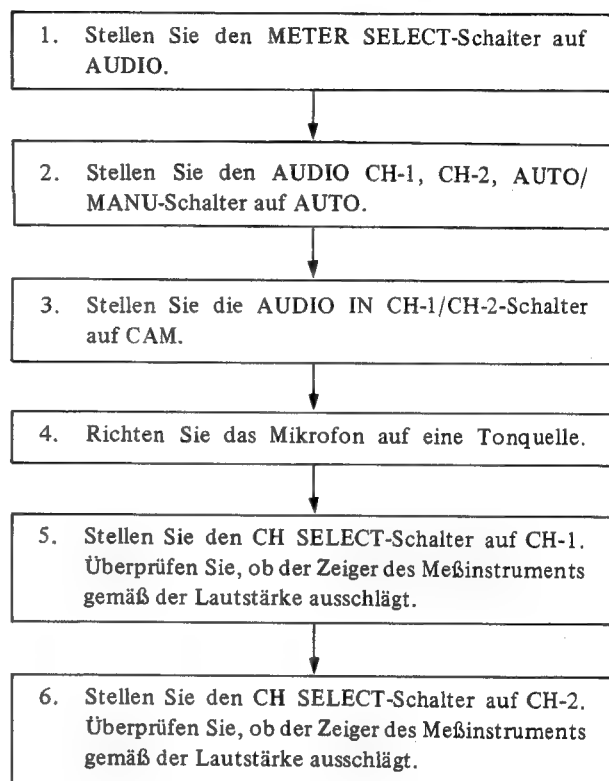
### 3. Überprüfen des Videorecorders

Führen Sie die Schritte 3-1. bis 3-5. der Reihe nach durch.

#### 3-1. Überprüfen des Bandtransports



#### 3-2. Überprüfen der automatischen Einstellung des Aufnahmepegels



### 3-3. Überprüfen der manuellen Einstellung des Aufnahmepegels

1. Stellen Sie den AUDIO CH-1, CH-2, AUTO/MANU-Schalter auf MANU.

2. Drehen Sie den AUDIO LEVEL CH-2-Regler im Uhrzeigersinn.  
Überprüfen Sie, ob der Zeiger des Meßinstruments ausschlägt.

3. Stellen Sie den CH SELECT-Schalter auf CH-1.

4. Drehen Sie den AUDIO LEVEL CH-1-Regler im Uhrzeigersinn.  
Überprüfen Sie, ob der Zeiger des Meßinstruments ausschlägt.

5. Drehen Sie den AUDIO CH-1-Regler der Kamera.  
Überprüfen Sie, daß die Pegelmeter ausschlagen.

6. Stellen Sie den AUDIO-Schalter auf AUTO.

### 3-4. Überprüfen von Ohrhörer und Lautsprecher

1. Drehen Sie die VOLUME-Regler des Video-recorders und der Kamera nach rechts.  
Überprüfen Sie, ob sich die entsprechende Lautsprecher-Lautstärke ändert.

2. Schließen Sie einen Ohrhörer an die EARPHONE-Buchse an.  
Überprüfen Sie, ob der Lautsprecher abgeschaltet wird, und die Wiedergabe über Ohrhörer erfolgt.

3. Drehen Sie am VOLUME-Regler.  
Überprüfen Sie, ob sich die Ohrhörer-Lautstärke ändert.

### 3-5. Überprüfen der Ton-Hinterbandkontroll-Funktion

1. Stellen Sie den AUDIO IN CH-1-Schalter auf CAM und den AUDIO IN CH-2-Schalter auf LINE.

2. Drücken Sie die VTR-Taste.

3. Überprüfen Sie, ob der Ton vom Mikrofon zu hören ist.

4. Stellen Sie den AUDIO IN CH-1-Schalter auf LINE und den AUDIO IN CH-2-Schalter auf CAM.

5. Überprüfen Sie, ob der Ton vom Mikrofon zu hören ist.

### 3-6. Überprüfen der Außenmikrofone

1. Schließen Sie die Mikrofone an die AUDIO IN CH-1/CH-2-Anschlüsse an.

2. Stellen Sie die AUDIO IN CH-1/CH-2-Schalter auf MIC.

3. Stellen Sie den AUDIO-Schalter auf AUTO.

4. Richten Sie die Außenmikrofone auf eine Tonquelle.

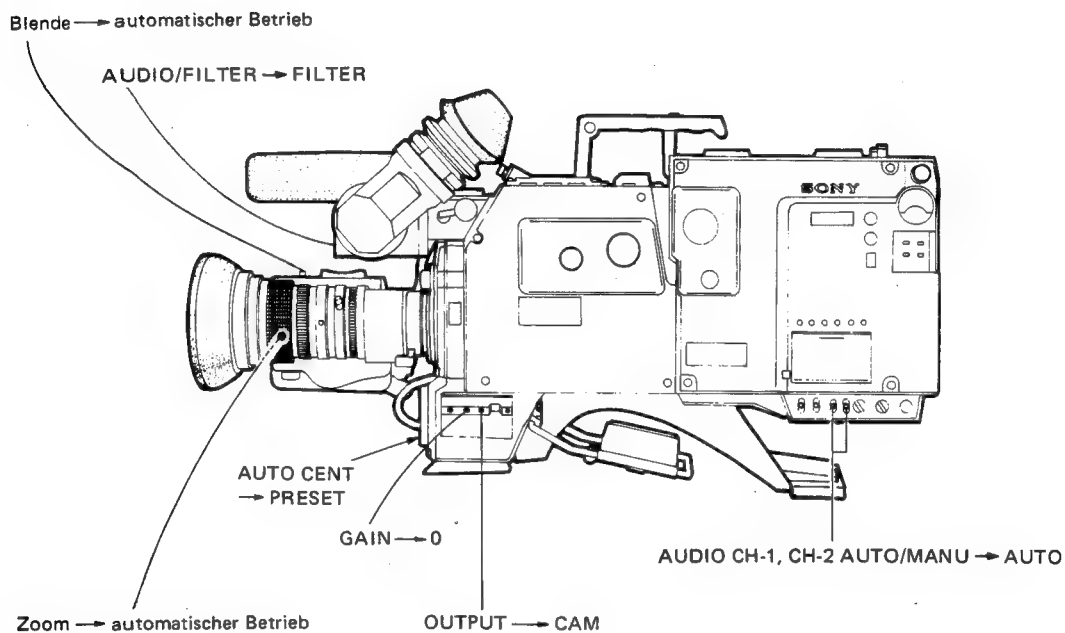
5. Stellen Sie den CH SELECT-Schalter auf CH-1.  
Überprüfen Sie, ob der Zeiger des Meßinstruments ausschlägt.

6. Stellen Sie den CH SELECT-Schalter auf CH-2.  
Überprüfen Sie, ob der Zeiger des Meßinstruments ausschlägt.

## 1-12.4. Bedienung

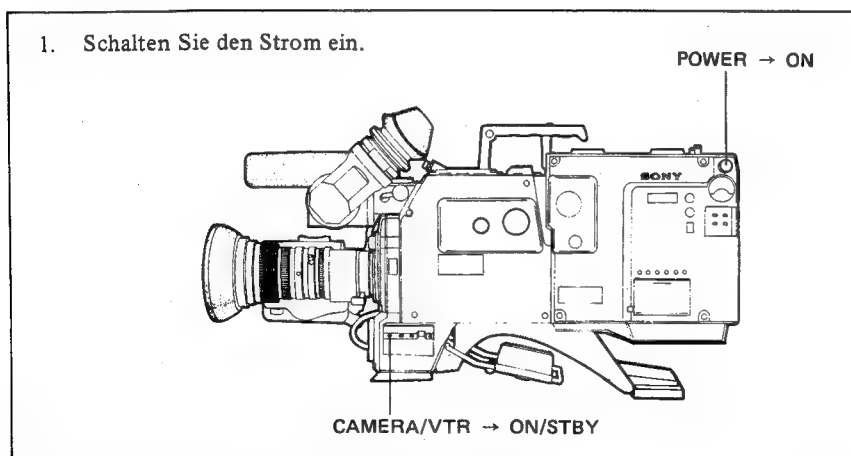
### 1. Vorbereitung

Überprüfen Sie vor Inbetriebnahme, daß die Schalter wie unten gezeigt richtig eingestellt sind.



### 2. Aufnahme

1. Schalten Sie den Strom ein.



2. Setzen Sie eine Cassette ein.

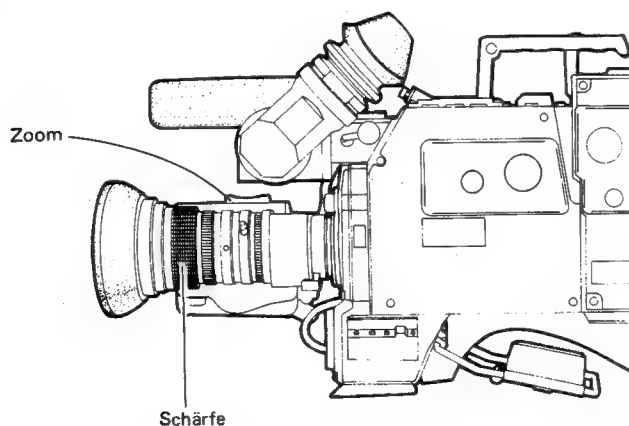
3. Wählen Sie einen den Lichtverhältnissen entsprechenden Filter.

4. Stellen Sie den Weiß- und Schwarzabgleichwert ein.  
**Wenn der Weiß- und Schwarzabgleichwert gespeichert ist,**  
 stellen Sie den WHITE BAL-Schalter auf AUTO.  
**Wenn der Weiß- und Schwarzabgleichwert nicht gespeichert ist, Sie jedoch schnell mit der Aufnahme beginnen wollen,**  
 stellen Sie den WHITE BAL-Schalter auf PRESET und den AUTO W/B BAL-Schalter auf BLK. Sie erhalten dann einen Weiß- und Schwarzabgleich für 3200°K.

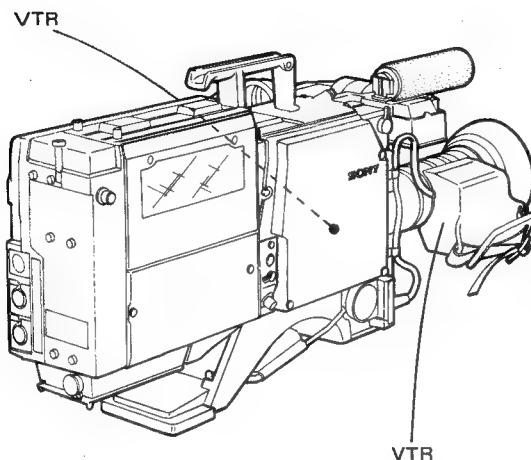
**Durchführung des Weiß- und Schwarzabgleichs**

1. Stellen Sie den WHITE BAL-Schalter auf AUTO.
  2. Zoomen Sie auf den weißen Gegenstand.
  3. Stellen Sie den AUTO W/B BAL-Schalter auf BLK. Sobald die W/B CENT-Anzeige aufleuchtet, ist der Schwarzabgleich durchgeführt.
  4. Stellen Sie den AUTO W/B BAL-Schalter auf WHT, und prüfen Sie, ob die W/B CENT-Anzeige aufleuchtet.
- Genauere Angaben zum Weiß- und Schwarzabgleich finden Sie im Abschnitt „1-6. Einstellungen“.

5. Richten Sie die Kamera auf das Motiv und stellen Sie Schärfe und Zoom ein.



6. Drücken Sie die VTR-Taste am Objektiv oder an der Kamera. Die Aufnahme beginnt.



Die REC-Lampe im Sucher leuchtet während der Aufnahme.

7. Um die Aufnahme zu beenden, drücken Sie die VTR-Taste erneut. Der Videorecorder schaltet dann in Bereitschaftsbetrieb, und die REC-Lampe geht aus.

### Manuelle AufnahmepegelEinstellung

Der Tonaufnahmepegel kann wie im folgenden beschrieben manuell eingestellt werden. Bei Verwendung eines BVV-1PS der Serien-Nr. 50000 und höher oder des BVV-1APS kann der Aufnahmepegel von Kanal 1 sowohl am Videorecorder als auch an der Kamera eingestellt werden.

1. Stellen Sie die AUDIO IN-Schalter für beide Tonkanäle wie folgt ein:  
 Bei Verwendung des eingebauten Mikrofons → CAM  
 Bei Verwendung eines Außenmikrofons → MIC  
 Bei Aufnahmen eines LINE-Eingangssignals → LINE
2. Stellen Sie die AUDIO CH-1, CH-2 AUTO/MANU-Schalter auf MANU.
3. Stellen Sie den Pegel von Kanal 1 wie folgt ein.
  - 1) Drehen Sie den AUDIO LEVEL CH-1-Regler des Videorecorders ganz nach rechts.
  - 2) Stellen Sie den AUDIO/FILTER-Schalter der Kamera auf AUDIO.
  - 3) Stellen Sie den AUDIO CH-1-Regler der Kamera so ein, daß die Lampen 1 bis 4 der FILTER/AUDIO-Anzeige normalerweise leuchten und die rote Anzeige nur ganz kurzzeitig in den Spitzen aufleuchtet.
    - Die Maximaldämpfung mit dem AUDIO CH-1-Regler der Kamera beträgt ca. 20 dB. Ist innerhalb dieses Bereichs keine geeignete PegelEinstellung möglich, so stellen Sie den Pegel am AUDIO LEVEL CH-1-Regler des Videorecorders ein.
    - Die FILTER/AUDIO-Anzeige im Sucher zeigt je nach Spitzenpegel die folgenden Pegel an.

FILTER/AUDIO-Anzeige

1	2	3	4	
---	---	---	---	--

Regelmeteranzeige (VU)

-6	-4	0	+3	+6
----	----	---	----	----

4. Der Pegel von Kanal 2 wird am AUDIO LEVEL CH-2-Regler des Videorecorders so eingestellt, daß der Zeiger der Pegelanzeige maximal bis 0 VU ausschlägt.

1-12-5. Warnsystem

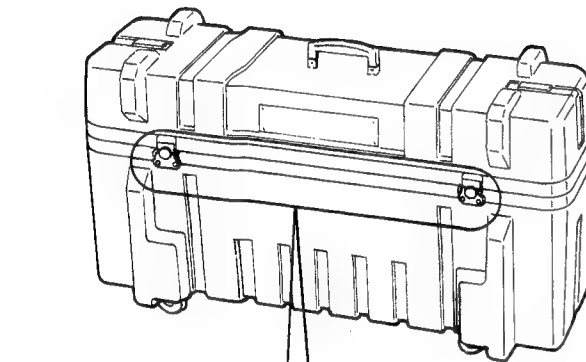
Die Anzeigen im Sucher, die Warnlampen am Videorecorder und der Lautsprecher- bzw. Ohrhörer-Warnton machen die Bedienungsperson auf die folgenden Betriebszustände aufmerksam.

Ursache	Anzeigen im Sucher			Warnlampen am Videorecorder						Warnton	Videorecorder-Betrieb und Korrektur
	REC	TAPE 5M	BATT	RF	SERVO	HUMID	SLACK	TAPE END	BATTERY		
Bandende nahezu erreicht										W W	Aufnahme geht weiter.
Bandende										~~~~~	Aufnahme stoppt. Cassette wechseln.
Batterie fast leer										W W	Aufnahme geht weiter.
Batterie leer										~~~~~	Aufnahme stoppt. Batterie wechseln.
Fehler im Aufnahmesystem										W W W	Aufnahme geht weiter, kann jedoch nicht richtig durchgeführt werden. Kopfreinigung ist erforderlich. (Für Einzelheiten siehe die Anleitung des BVV-1PS/BVV-1APS.)
Abnormalität im Servo										W W W	Aufnahme geht weiter, kann jedoch nicht richtig durchgeführt werden. Schalten Sie den Strom aus und wenden Sie sich an Ihren Sony-Händler. Ein kurzes Aufleuchten der Anzeige beim Anlaufen des Bandes ist normal und stellt kein Problem dar.
Kondensation										W W W	Aufnahme geht weiter, solange das Band nicht an der Kopftrommel haftet. Wenn dieser Fall eintritt, stoppt die Aufnahme, und das Band wird entladen.
Zu geringer Bandzug										~~~~~	Die Aufnahme stoppt. Der POWER-Schalter und die EJECT-Taste funktionieren nicht. Nehmen Sie die Cassette manuell unter Bezugnahme auf den Abschnitt 2 der Anleitung des BVV-1PS/BVV-1APS heraus.

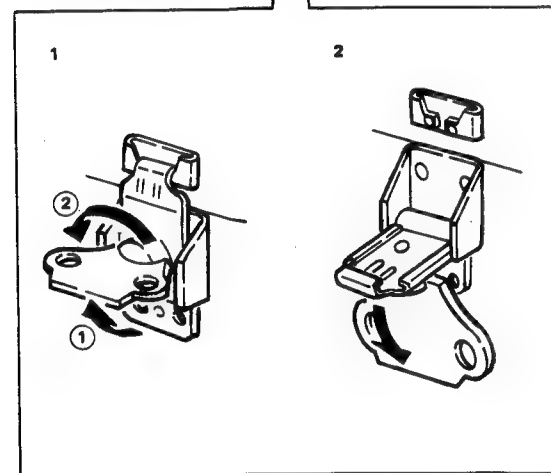
Bedeutung der Symbole	
Anzeigen	Warnton
Blinkt mit 1 Hz	W W 1-kHz-Ton, 1-Sekunden-Intervall
Blinkt mit 4 Hz	W W W 1-kHz-Ton, 1/4-Sekunden-Intervall
Leuchtet auf	~~~~~ Dauerton

### 1-12-6. Verwendung' des Tragekoffers

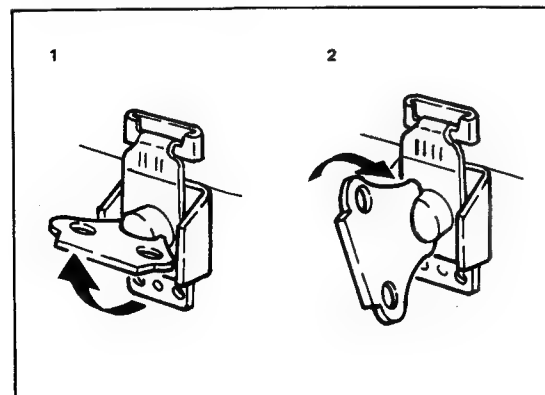
Zur Verpackung siehe unter „1-12-8. Verpacken des BVW-30AP“.



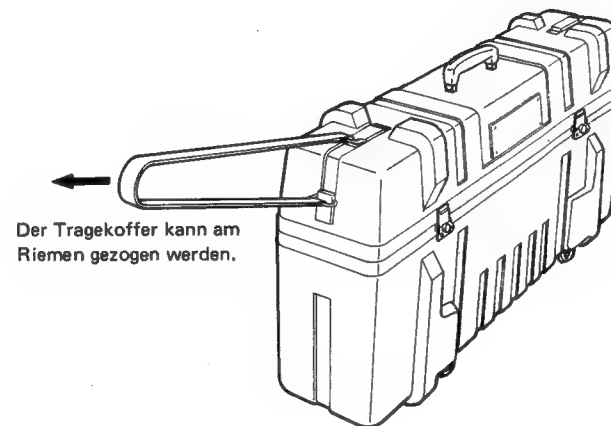
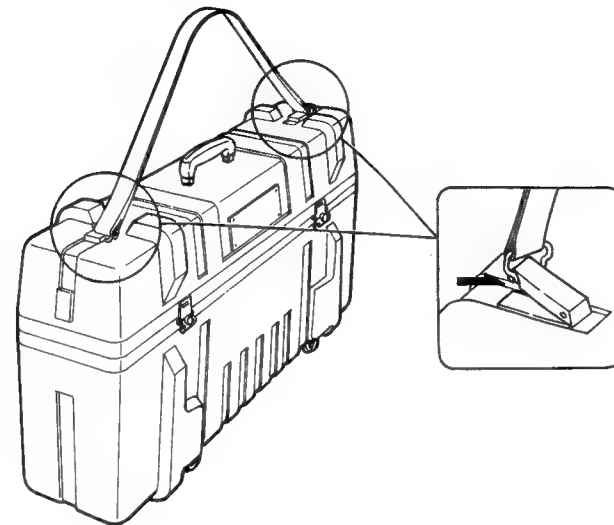
Öffnen des Koffers



Schließen des Koffers



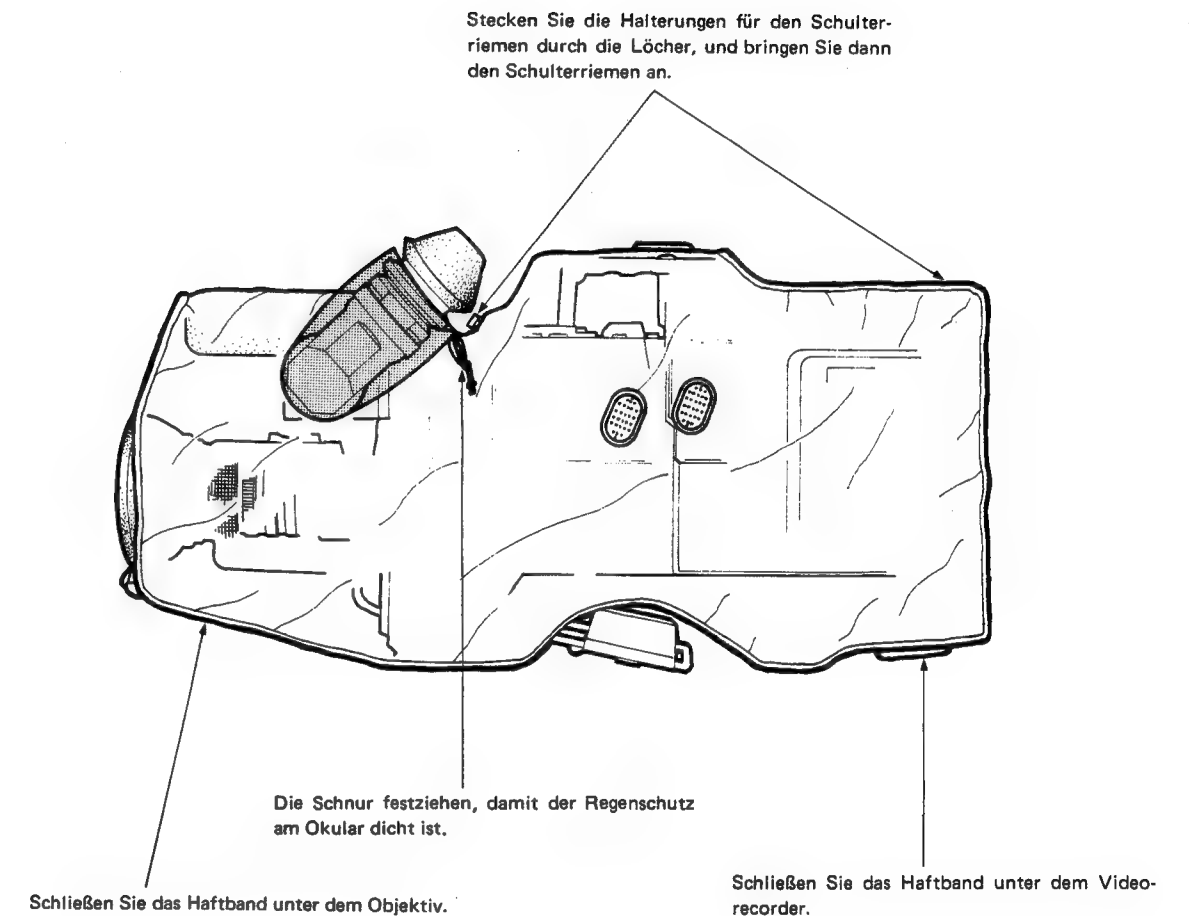
Anbringen des Schulterriemens am Tragekoffer



#### Hinweise

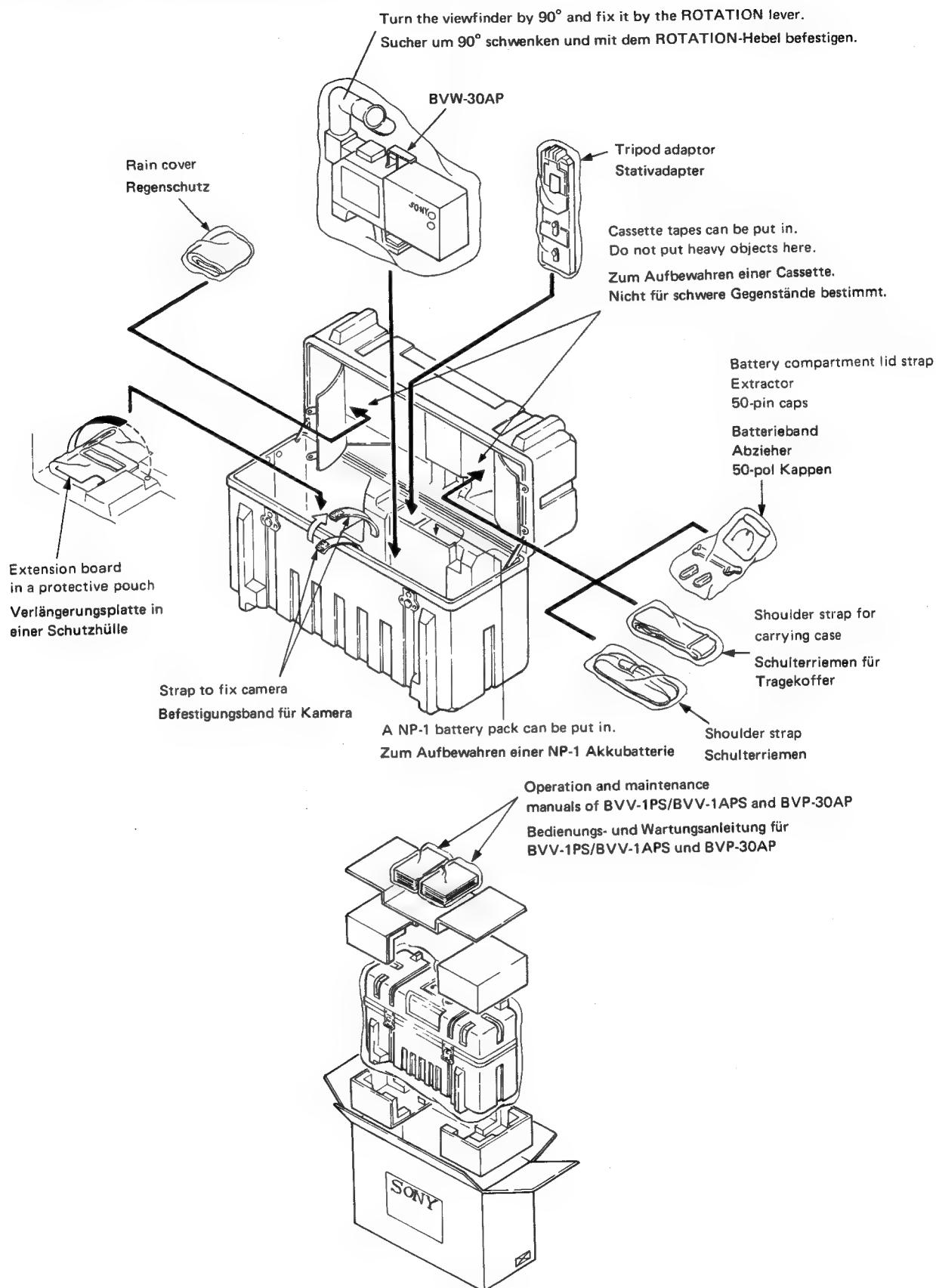
- Schützen Sie die Einheit vor Vibrationen und Stößen.
- Stellen Sie sich nichts auf den Tragekoffer.

### 1-12-7. Anbringung des Regenschutzes





## 1-12-8. Packing of the BVW-30AP/Verpacken des BVW-30AP



## SECTION 2

### TECHNICAL INFORMATION

#### 2-1. CIRCUIT DESCRIPTION

##### PA-37 board

It contains a set of preamplifiers which amplify the small signals from a set of imaging tubes so as to process them in the succeeding stages. The front end of each preamplifier is located around the target of the respective imaging tube so as to minimize degradation of performance due to stray capacitances. It is also used to add the TEST SAW signal to the main channel signal.

##### VA-23 board

It receives the signals from the PA-37 board. Black-shading correction, amplification of 0 dB, 9 dB, or 18 dB, white-shading correction, and white balancing are performed on the VA-23 board.

It also contains the ABO circuit to optimize the beam of each imaging tube in terms of incident light.

The G-channel signal, among the B-, G-, and R-channel signals from the VA-23 board, is applied to the IE-6 board, and the remaining B- and R-channel signals to the PR-75 board. It also contains the control to widen the dynamic range for AUTO KNEE (D.C.C.) correction.

##### IE-6P board

It generates the horizontal and vertical detail-signals out of the G-channel signal. The respective detail signal enhances the contour of an image and apparently improves resolution.

It also contains the horizontal and vertical GATE-PULSE generator for use in automatic centering, and the VF video output circuit.

##### PR-75 board

It contains video signal processing circuits. The signal processing circuit mixes with the B-, G-, and R-channel signals the detail-signal and masking signal. It then performs flare correction to compensate for floating of the black level due to differences in the characteristics of the respective imaging tubes, white clipping so as to clip the signals of greater than the threshold level in order to prevent the VTR against overmodulation, knee-point setting accomplished to apparently assure a dynamic range to some extent in white levels, and gamma-correction to compensate for the  $\gamma$ -characteristics of the CRT.

The knee point has two functions both the manual knee point (as ever usual) and auto knee point (new system). They are selected by switch in the PR-75 board. The auto knee point is called by D.C.C. (=Dynamic Contrast Control).

In addition, it also contains the NAM-Y signal output circuit for driving the automatic iris control, ABL signal generator for use in automatic black level adjustment, and B-, G-, and R-channel output circuits used for adjusting the camera.

##### EN-33A board

It contains the Y-signal, composite video signal, R-Y signal, and B-Y signal generators which can be operated by the B-, G-, and R-channel signals from the PR-75 board.

It also contains the color-bar signal generator.

One can select either the camera signal or the color-bar signal in accordance with the selector position.

##### DF-23 board

It contains a pair of deflection circuits for the respective imaging tubes, where sawtooth wave signals necessary for beam deflection can be generated. The sawtooth wave signals are applied to the deflection electrodes of the respective imaging tubes.

For use with the 3-tube camera, it contains the registration setting waveform generator for use in registration adjustment.

##### SH-8A board

It generates the shading correction signals when the sawtooth wave signals are fed from the DF-23 board. These correction signals are used to compensate for shading occurring in the lens system and imaging tubes.

##### AT-16 board

It automatically accomplishes centering, white balancing, and black balancing for the camera, using a microcomputer. When the CCU is connected to the camera, it performs interfacing with the CCU so as to send the control signals from the CCU to the related circuit within the camera.

It also contains the driver for automatic iris control.

##### SG-63A board

It contains the synchronizing signal generator and generator locking circuit for synchronizing with the external sync.

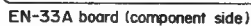
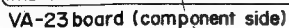
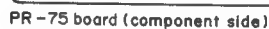
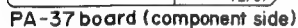
##### PS-41 board

It contains the switching voltage regulator, series voltage regulator, and DC-DC voltage converter.

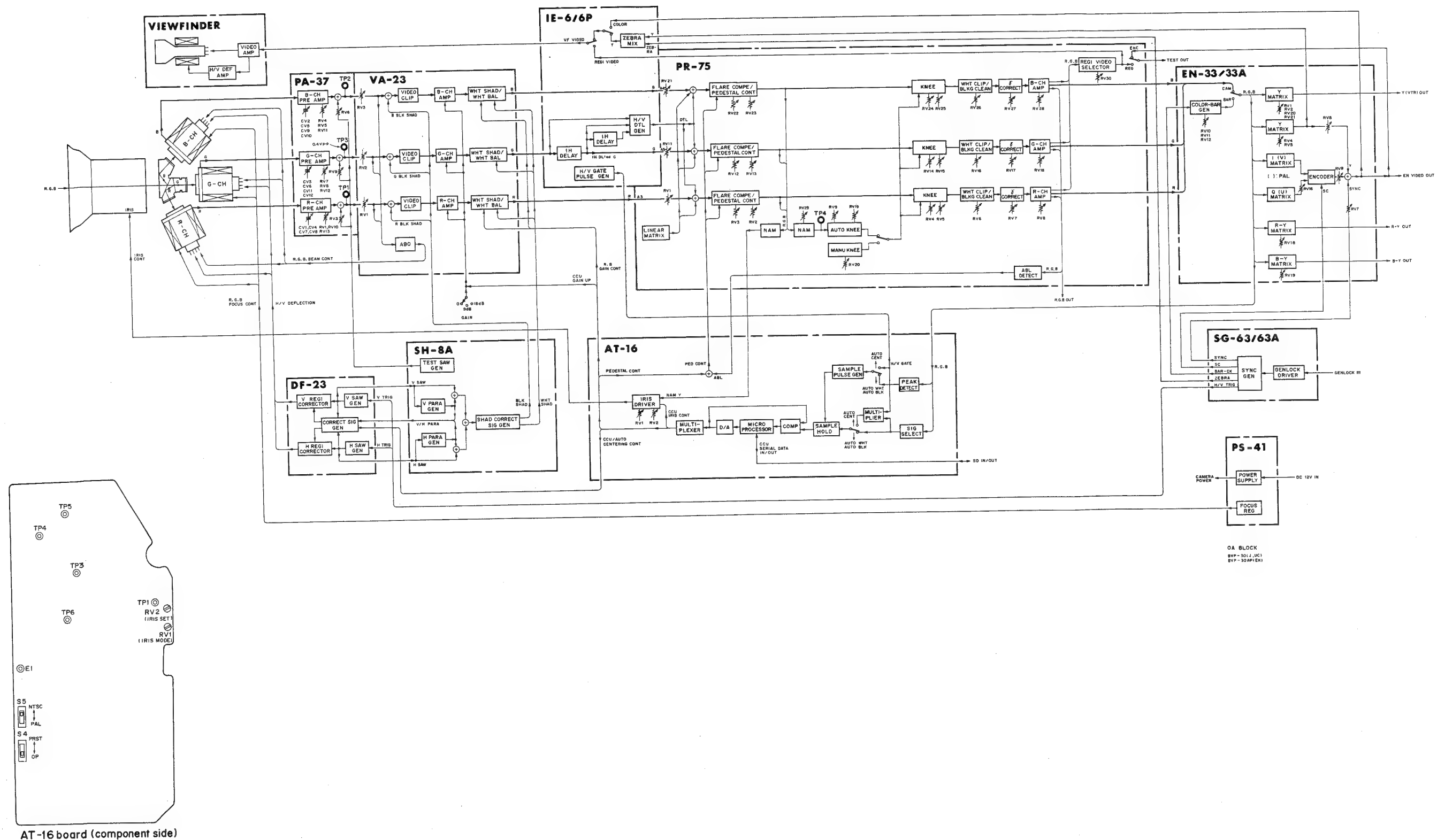
DC voltages are generated when a voltage of 12 volts DC is applied to the camera as power.

It also contains the electro-magnetic focusing current regulator for each imaging tube.

## 2-2. FUNCTION OF CONTROLS



# OVERALL BLOCK DIAGRAM



### VA-23

#### GAIN (R, G, B)

Adjusts so that R, G and B signals are equalized in level.

#### BEAM (R, G, B)

Adjusts the beam amount.

### SH-8A

#### TEST

Turns on or off the test signal.

#### TEST WIDTH

Adjusts the pulsewidth of the test signal.

#### BIAS LIGHT

Turns on or off the bias light signal. When turned on, the brightness of the bias light can be changed using VR. When the iris is set at CLOSE, adjusts so that the output level of a pre-amplifier is 10 mV.

#### EXTENDER (R, G, B)

Adjusts using a lens with extender so that the color shading is minimized when an extender is used.

#### BLK BAL (R, G, B)

Adjusts so that no pedestal level changes when the gain switch is set at +9 dB or +18 dB.

#### H.PARA. H.SAW

#### V.PARA. V.SAW

Compensates the black level shading when the iris is set at CLOSE.

#### MOD H.SAW. MOD V.SAW

#### MOD V.PARA

Compensates the white level shading on the entire white pattern.

#### MOD V.FRAME (LEVEL, CLIP)

Reduces the vertical framing on the entire white pattern.

#### V.FRAME (BAL, R, G, B, CLIP)

Reduces the vertical framing when the iris is set at CLOSE.

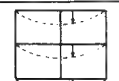
### DF-23

#### Registration adjustment

#### H.BOW (R, B)



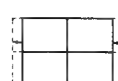
#### V.BOW (R, B)



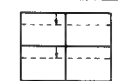
#### V.SIZE (R, B)



#### H.SIZE (R, B)



#### V.CENT (R, B)



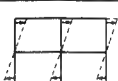
#### V.LIN (R, B)



#### H.LIN (R, B)



#### SKEW (R, B)



#### ROT (R, B)



#### H.CENT (R, B)



### IE-6P

#### ZEBRA (ON/OFF)

Changes over the zebra signal to ON or OFF. If the ZEBRA (ON/OFF) switch is being set to OFF, it inhibits switch ON or OFF from the viewfinder.

#### DTL (ON/OFF)

Changes over the detail signal to ON or OFF.

#### DTL

Adjusts the detail amount.

#### CRISP

Reduces the low-amplitude noise component in the detail signal.

#### LEV DEP

Sets so that the detail signal is not superimposed near the black level of a signal.

#### H/V RATIO

Adjusts the balance of the H and V of the detail signals.

### PR-75

#### PED (R, G, B)

Adjusts the pedestal level of R, G and B signals. (Set at 20 mV.)

#### FLR (R, G, B)

Compensates the dispersion of the video signal due to the flare of R, G and B signals.

#### W.CLIP (R, G, B)

Sets the white clip level of R, G and B signals.

#### DCC (ON)

Change over the manual knee or the auto knee. This switch selects the manual knee and auto knee, when this switch set to ON, the machine functions as auto knee and knee point goes low.

### PS-41

#### FOCUS (R, B, B)

Adjusts so that the amplitude in level of 5 MHz and 6 MHz on the multi-burst chart is maximized.

### SG-63A (Rear side of camera)

#### H BLK WIDTH S3

Increases/decreases the horizontal blanking width by 70 nsec.

#### H PHASE RV7

Adjusts the phase of the camera video signal in the external synchronous mode.

#### EXT SC PHASE S1

Inverts the subcarrier phase of the camera video signal by 180° in the external synchronous mode.

#### EXT SC PHASE RV1

Adjusts the subcarrier phase of the output signal in the external synchronous mode.

#### INT SC PHASE RV2

Adjusts the subcarrier phase of the output signal in the internal synchronous mode. (Be sure not to turn RV2 except when adjustment is out of condition.)

#### CF S2

Turns on or off the color framing pulse.

#### CABLE COMPE S5

In the external synchronous mode, turns off the GEN LOCK signal from a connection cable under 150m and turns on the signal for one exceeding 150m.

### EN-33A

#### BARS (EBU/95%)

Switches the color bar signal to the EBU specification or to "95%".

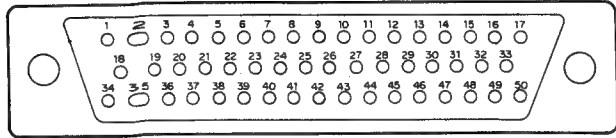
#### BLACK BAL (U, V)

Performs the black balance (carrier balance) adjustment of the composite video signal.

2-3. CONNECTOR'S PIN FUNCTION

50PIN CON NECTOR

— EXT SIDE —

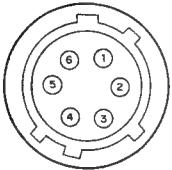


PIN NO.	SIGNAL	SPECIFICATION
1	GENLOCK IN	VBS or BS input for GENLCOK Zi = 1 kΩ 1 Vp-p
2	GENLOCK(GND)	
3	+9V OUT	+9V output
4	−9V OUT	−9V output
5	UNREG(GND)	GND for +12V input
6	UNREG(GND)	
7	RED VIDEO OUT	Red signal output Zo = 75Ω 0.7 Vp-p (No SYNC signal provided)
8	GRN VIDEO OUT	Green signal output Zo = 75Ω 0.7 Vp-p (No SYNC signal provided)
9	BLU VIDEO OUT	Blue signal output Zo = 75Ω 0.7 Vp-p (No SYNC signal provided)
10	RGB(GND)	GND for RGB signal
11	NC	Non connection
12	NC	
13	NC	
14	SD IN/OUT	Input/output of serial data for camera control
15	MIC(GND)	Microphone audio output Zo ≥ 600Ω −60 dBm balanced
16	MIC(X) OUT	
17	MIC(Y) OUT	
18	RET VIDEO IN	Return video input
19	RET VIDEO(GND)	
20	AU/ZEB CONT IN/OUT	Audio input, Zebra signal ON/OFF output
21	NC	Non connection
22	TAPE IND 1 IN	Tape remaining indicator signal input
23	TAPE IND 2 IN	
24	REC ALARM IN	Rec/tally signal input Zi = 20kΩ
25	BATT IND IN	Residual battery alarm signal input Zi = 300Ω
26	PB REF IN	VF video selecting signal input Zi = 100kΩ
27	VTR START/STOP OUT	VTR start/stop signal output
28	NC	Non connection
29	R−Y OUT	R−Y color difference signal output Zo = 75Ω 0.7 Vp-p
30	R−Y(GND)	
31	AUDIO CONT OUT	Audio gain control signal output DC 0 ~ 7V
32	VTR SAVE OUT	VTR save signal output SAVE: 4.5V STBY: 0V OR OPEN
33	AUDIO MONITOR IN	Audio signal input
34	SYNC OUT	SYNC pulse output 5 Vp-p
35	NC	Non connection
36	SHUT CLOSE IN	Shutter control signal input VTR REW: 4.5V
37	CF OUT	CF pulse output

PIN NO.	SIGNAL	SPECIFICATION
38	RET VIDEO CONT OUT	VF video selecting signal output PB: 0V
39	UNREG IN	Power supply input +12V
40	UNREG IN	
41	Y(VTR) OUT	Luminance signal output Zo = 75Ω 1 Vp-p SYNC negative
42	Y(VTR) (GND)	
43	EN VIDEO(VTR) OUT	Composite video signal output Zo = 75Ω 1 Vp-p SYNC negative
44	EN VIDEO(VTR) (GND)	
45	NC	Non connection
46	NC	
47	NC	
48	NC	
49	B−Y OUT	B−Y color difference signal output Zo = 75Ω 0.7 Vp-p
50	B−Y(GND)	

REMOTE CONNECTOR (6PIN)

— EXT SIDE —



PIN NO	SIGNAL	SPECIFICATION
1	NC	Non connection
2	SD IN/OUT	Input/output of serial data for camera control
3	UNREG(GND)	GND for +12V input
4	GENLOCK(GND)	VBS or BS input for GENLOCK
5	GENLOCK OUT	
6	UNREG OUT	Power supply output +12V

ZOOM LENS		
7x	A7x7B RM28	: FUJINON
12x	A12x9B ERM (with extender)	: FUJINON
13x	J13x9B4 IRS-2B (with extender)	: CANON
14x	A14x9B ERM28 (with extender)	: FUJINON
14x	A14x10B RM28	: FUJINON
15x	J15x9.5B4 KRS-B	: CANON

### 1. Iris Sensitivity Adjustment

Adjustment: When light of 2,000 luxes enter with the AUTO/MANU switch set at AUTO, set the VR just prior to iris hunting.

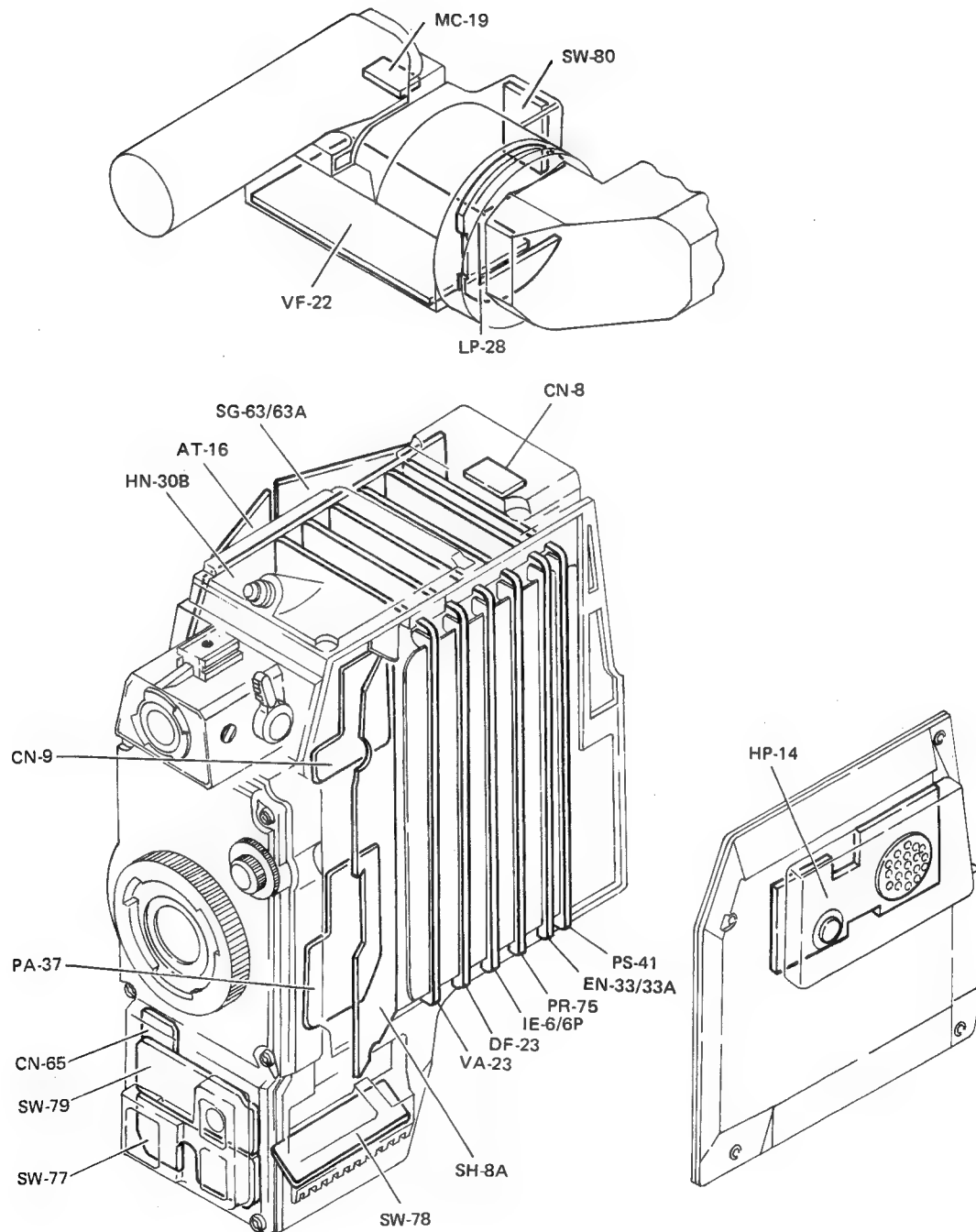
## 2. Mechanical Back Focus Adjustment

- 1) Adjust Mechanical Back Focus in the green channel by using a lens adjusting lever.  
(The pick-up tube in the green channel should not be shifted because of a reference level.)
- 2) Adjust Mechanical Back Focus in the red and blue channels on the pick-up tube side.
- 3) Adjust the horizontal and vertical sizes in the red and blue channels.



## SECTION 3 SERVICE INFORMATION

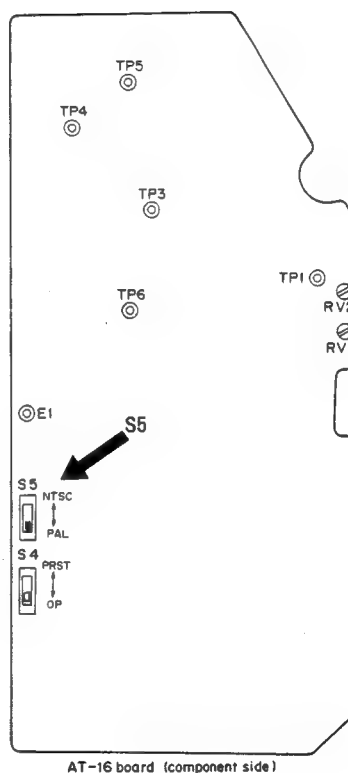
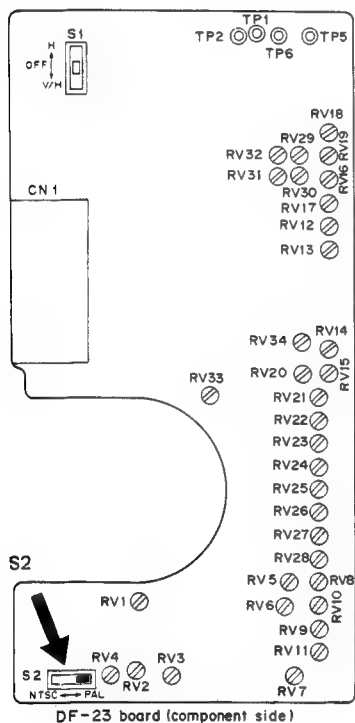
### 3-1. BOARD ARRANGEMENT





### 3-2. NOTES ON BOARD REPLACEMENT

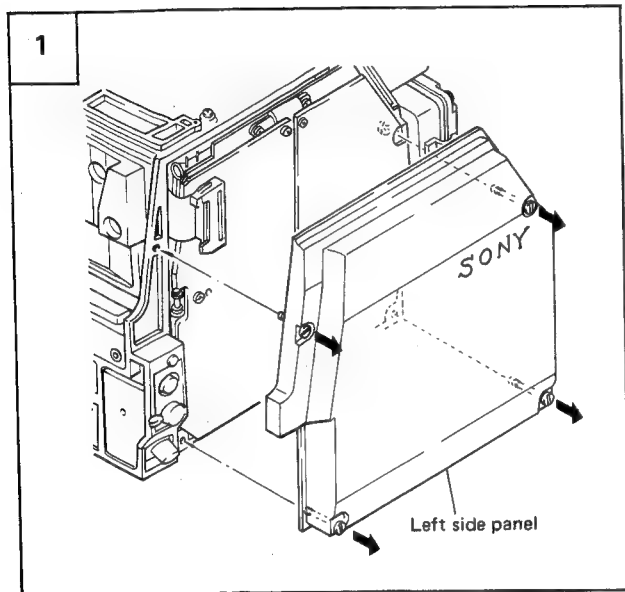
The DF-23 board and AT-16 board can be used in common for NTSC and PAL systems. The switching action of NTSC to PAL or PAL to NTSC is performed using the switches on the board. When used for the NTSC system, set S2 on the DF-23 board and S5 on the AT-16 board at the NTSC position as shown in the figure below. When used for the PAL system, set the switches at the PAL position.



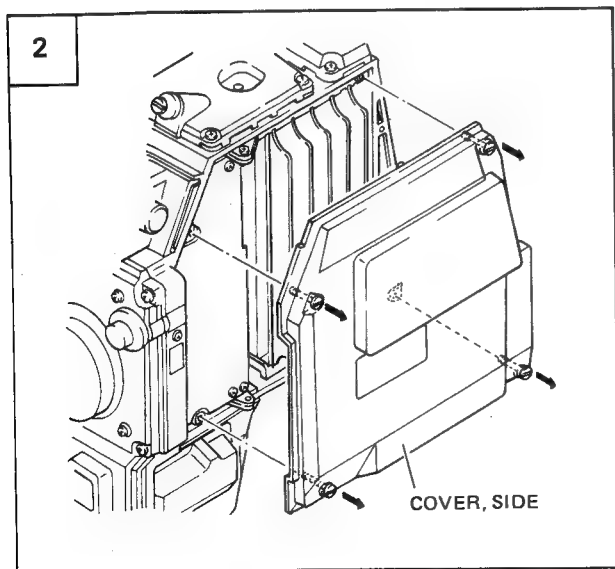
### 3-3. REPLACEMENT OF CAMERA TUBE

#### [REPLACEMENT OF RED TUBE]

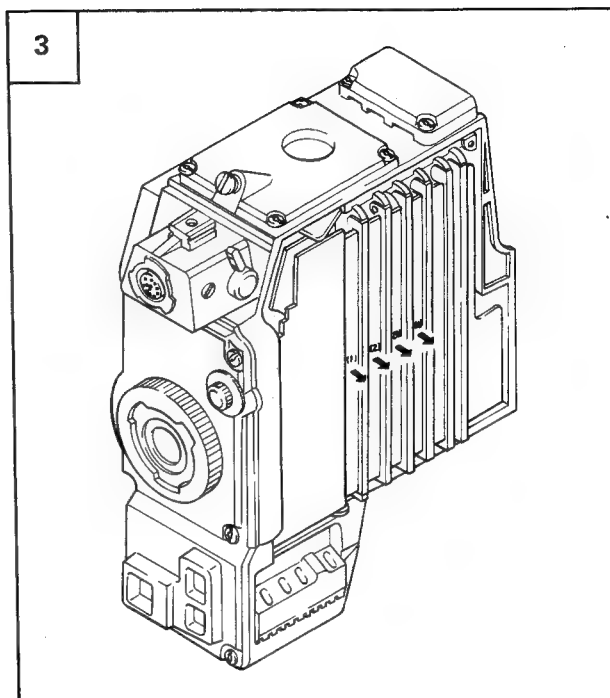
1. Loosen the four screws and remove the side cover.



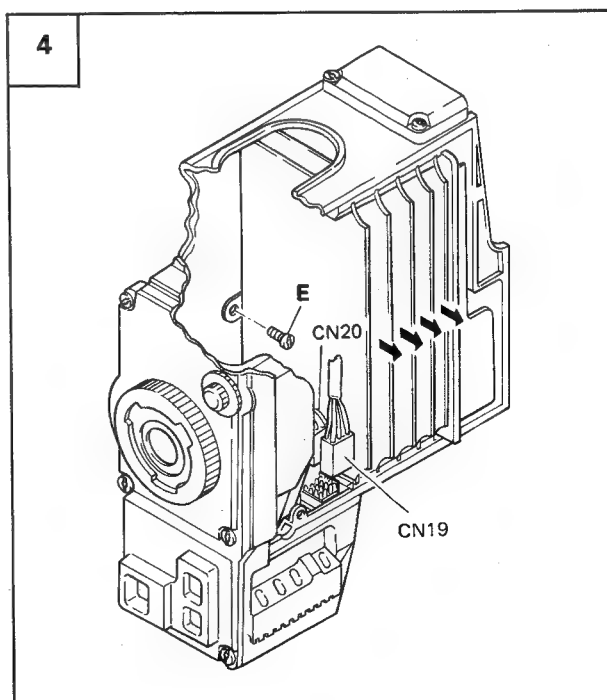
2. Loosen the four screws and remove the side cover.



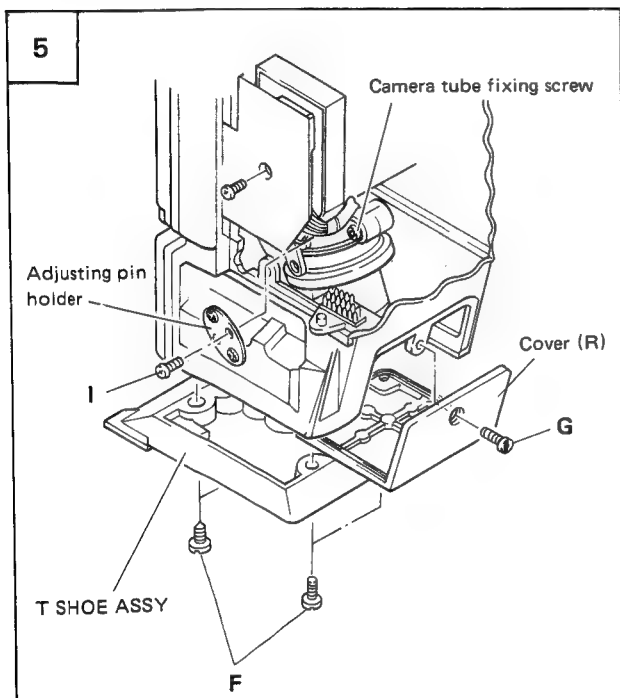
3. Pull out the boards (1), (2), (3) and (4) by using a board extractor.



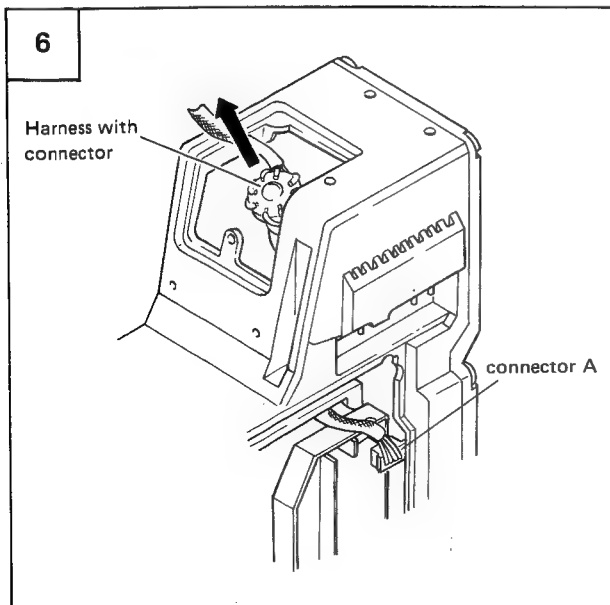
4. Remove the four screws E and pull out the four shield plates. Remove the connectors CN19 and CN20.



5. Remove the four screws F and remove the T-SHOE ASSY. Remove the three screws G to take out the cover (R). Remove the two screws I and take out the adjusting pin holder. Loosen the camera tube fixing screw.

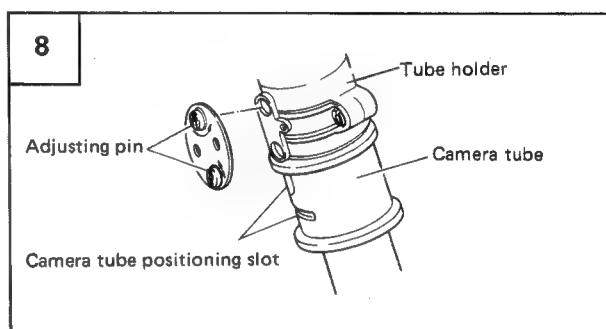


6. Remove the connector A from the PA board. Take out the camera tube from the tube holder. Remove the harness provided with connector from the camera tube.



7. Confirm that a new camera tube has its clear surface.

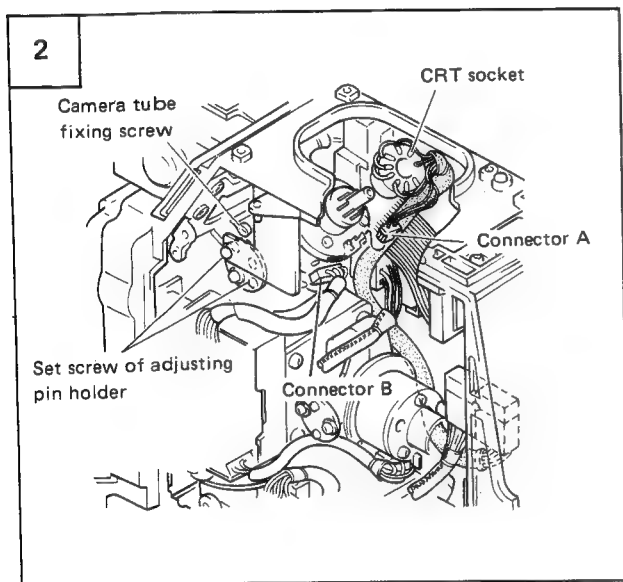
8. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you. The positioning relation between the adjusting pin and camera tube positioning slot should be as shown in the figure.



9. When replacement of a RED tube is completed, perform the following section 4 items: RED Tube for Registration Adjustment and RED Tube for Adjustment of Video Signal System.

### [REPLACEMENT OF BLUE TUBE]

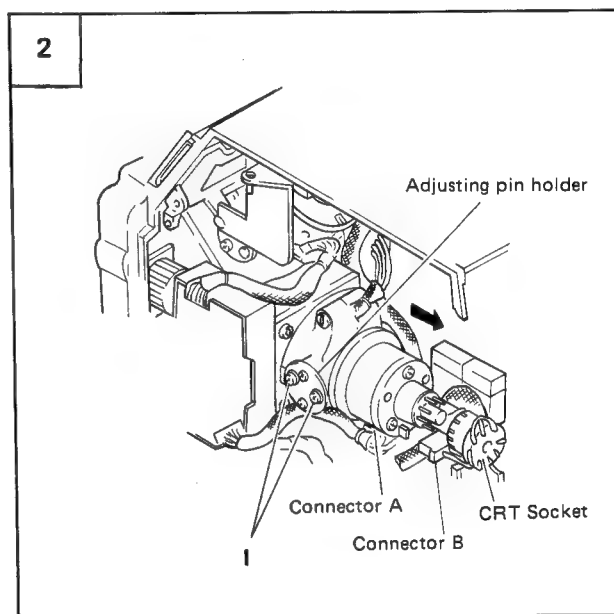
1. Perform Steps 1, 2, 3 and 4 in Replacement of RED tube.
2. Disconnect the CRT socket and the connectors A and B. Remove the two set screws of an adjusting pin holder to remove the pin holder. Loosen the camera tube fixing screw, and then take out the camera tube.



3. Confirm that a new camera tube has its clear surface.
4. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you.
5. When replacement of a BLUE camera tube is completed, perform the following section 4 items: BLUE Tube for Registration Adjustment and BLUE Tube for Adjustment of Video Signal System.

### [REPLACEMENT OF GREEN TUBE]

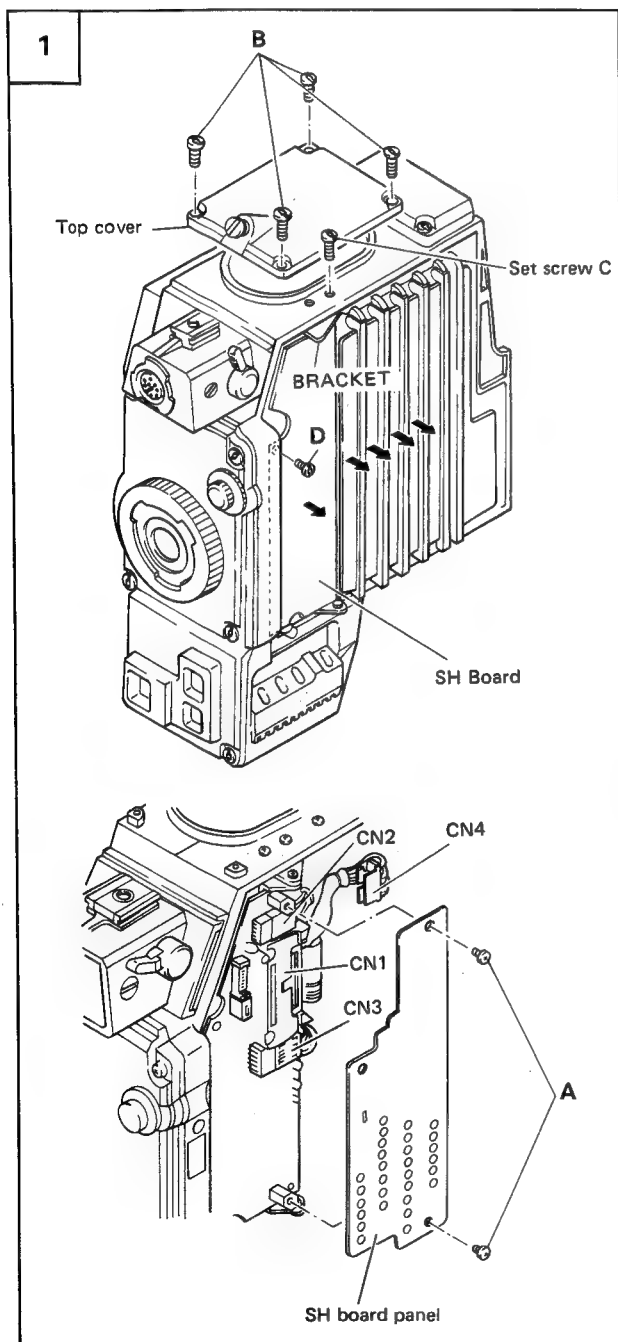
1. Perform Steps 1, 2, 3 and 4 in Replacement of RED tube.
2. Disconnect the CRT socket and the connectors A and B. Then, remove the two screws I and remove the adjusting pin holder to pull out the camera tube in the direction indicated by the arrow.



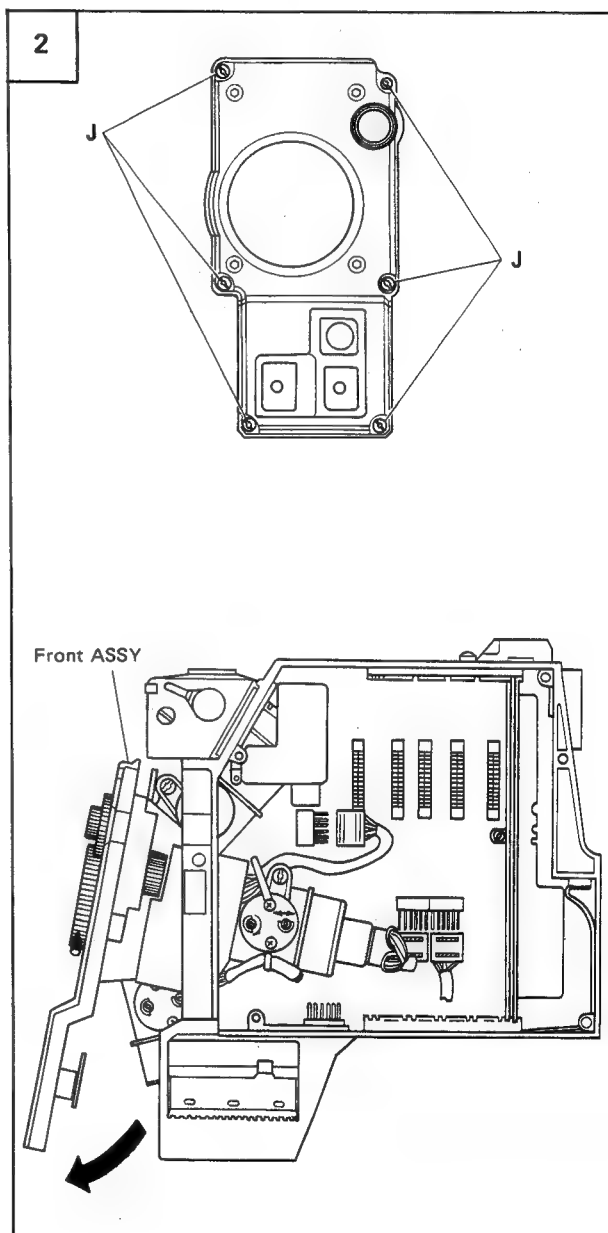
3. Confirm that a new camera tube has its clear surface.
4. Insert a new replacement camera tube into the tube holder. At this time, insert it so that the camera tube positioning slot is located toward you.
5. When assembling, be sure to pay attention to the harness position.  
(Refer to the figure shown in Step 6 in Replacement of Shutter.)
6. When replacement of a GREEN camera tube is completed, perform the following section 4 items: Registration Adjustment and Adjustment of Video Signal System.

### 3-4. REPLACEMENT OF SHUTTER

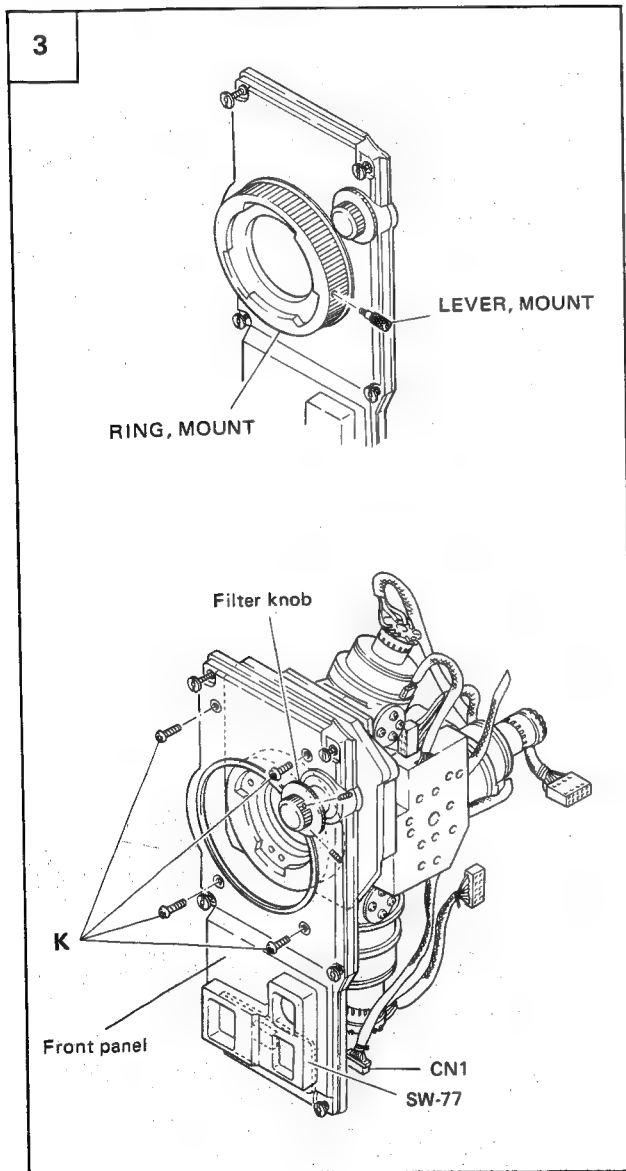
1. Remove the four screws B and remove the top cover. Remove the connector CN4 and two screws A on the SH board, remove the SH board panel, and then disconnect the connectors CN1, CN2 and CN3. Remove the two bracket set screws C and remove the SH board together with the bracket. Perform Steps 1, 2, 3 and 4 in Replacement of Red tube.



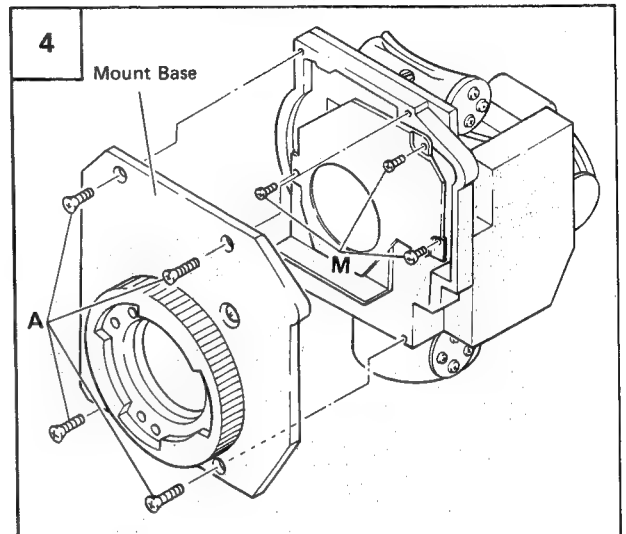
2. Remove the six front Assy fixing screws J. Pull out the lower part of the front Assy, and then remove the front Assy itself from the chassis. At that time, disconnect all the connectors from the front Assy, too.



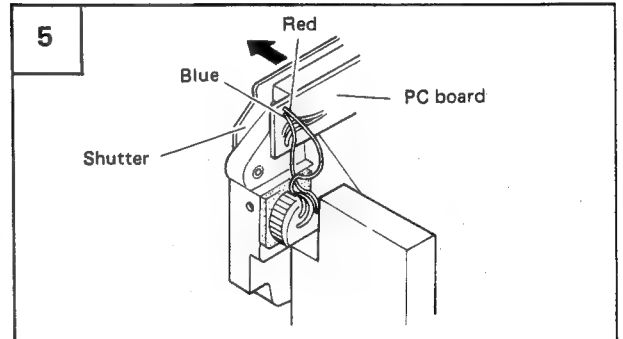
3. Remove the mount lever from the mount ring. Loosen the two set screws of a filter knob by using a L-shaped hexagonal wrench and remove the filter knob. Disconnect the connector CN1 on the SW-77 board, remove the four screws K by using a L-shaped hexagonal wrench (2.5), and then remove the front panel.



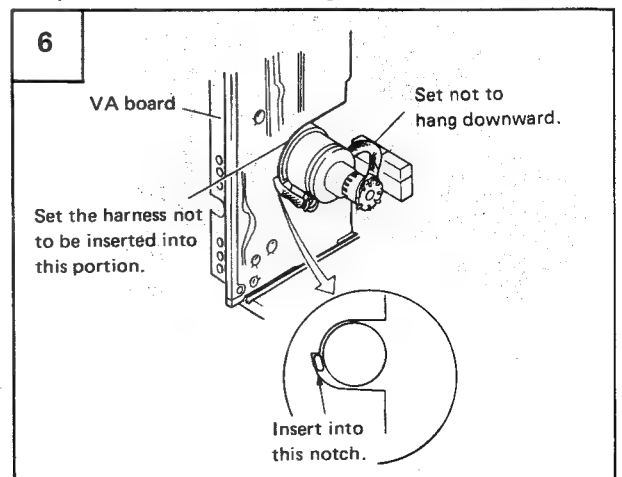
4. Remove the four screws A and remove the mount base from the optical block. Remove the three shutter fixing screws M.



5. Remove the red and blue lead wires from the printed circuit board by using a soldering iron. Pull out the shutter gently.

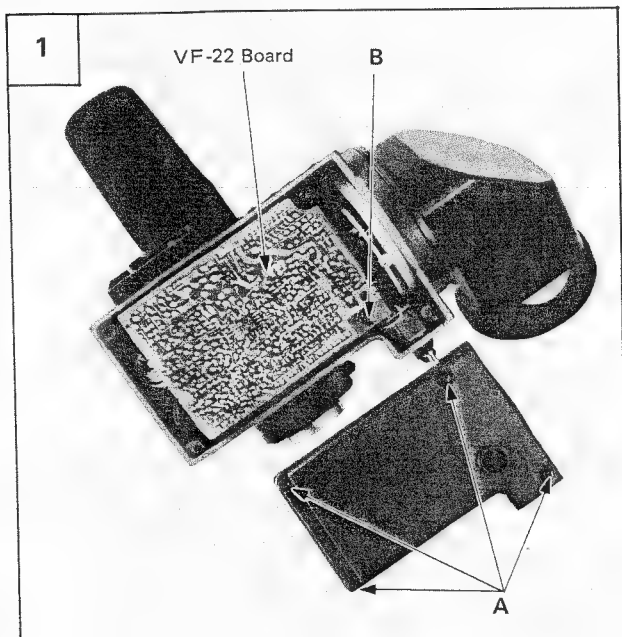


6. For replacement of a new shutter, attach in opposite procedures to disassembly. When assembling, be sure to pay attention to the harness position as shown in figure below.



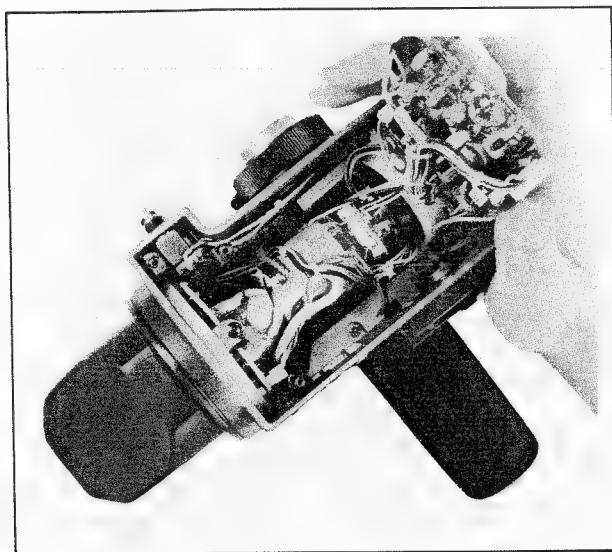
### 3-5. REPLACEMENT OF CRT

1. Remove the 4 rear cover screws (A) and take off the cover. Next, remove a fixing screw (B) of the VF-22 Board and remove the Board.

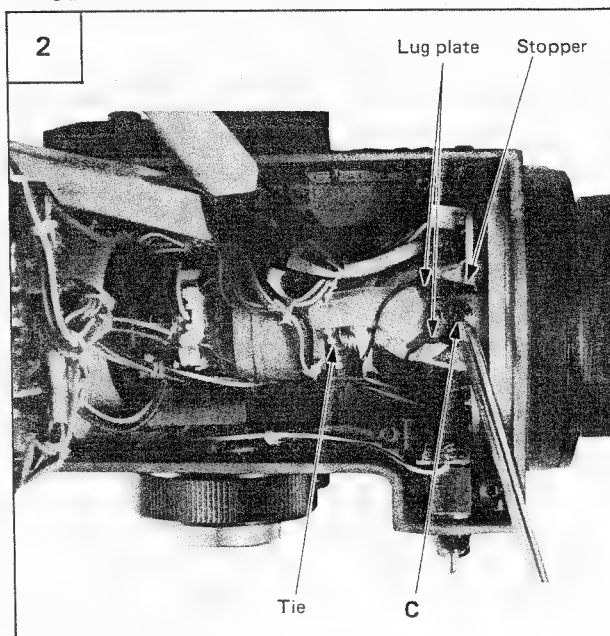


**Note:** Remember the arrangement of the harness in the viewfinder.

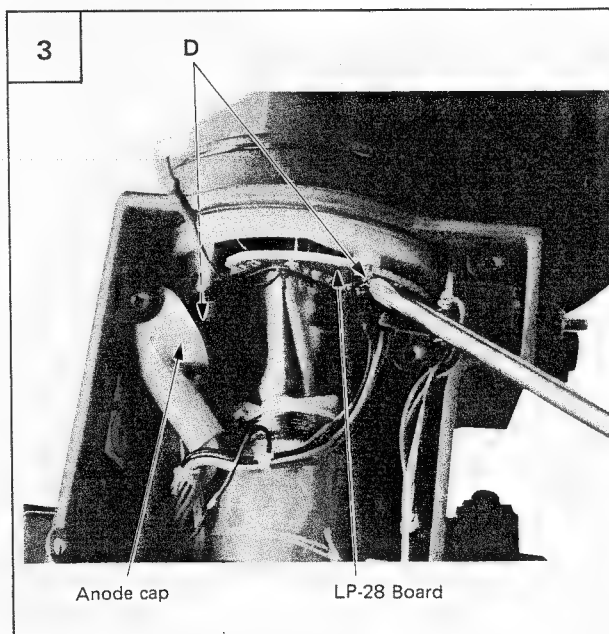
When you assemble the viewfinder after replacement of CRT, you should arrange the harness of viewfinder to prevent a damage of harness at the original position as shown below.



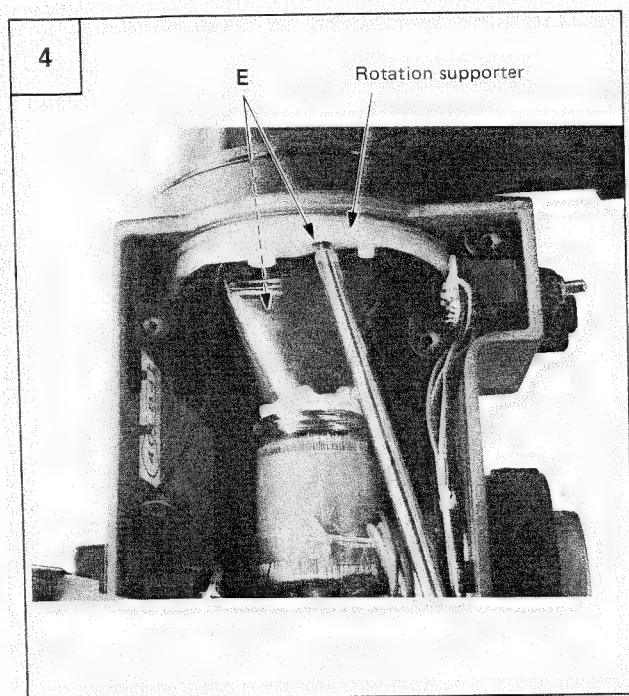
2. Turn the VF Tube so that the anode cap of CRT is upward. Remove the screw (C) and take off the stopper and 2 lug plates. Cut a tie.



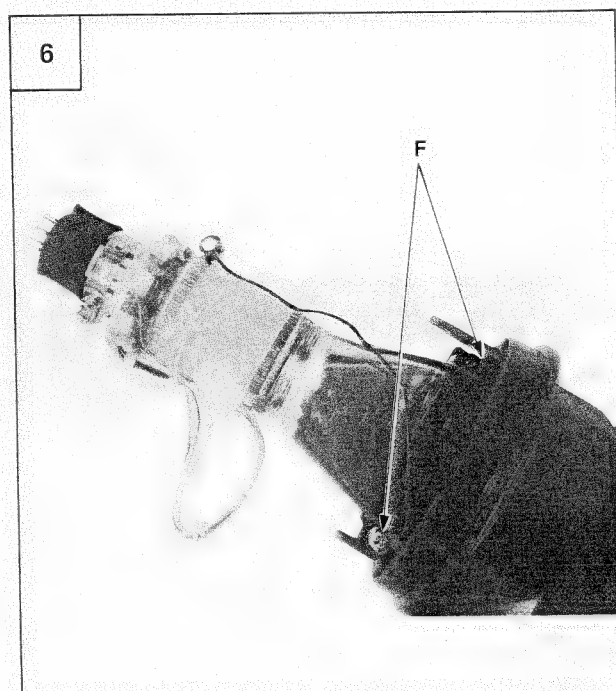
3. Remove the anode cap from the CRT. Remove the 2 fixing screws (D) and take off the LP-28 board.



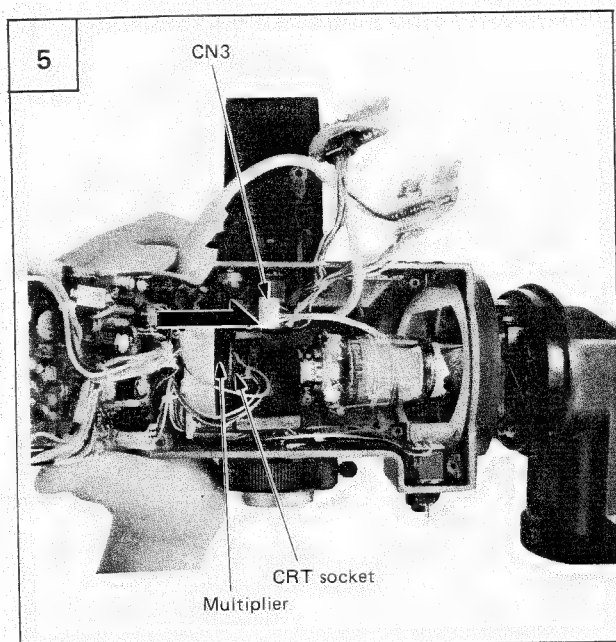
4. Remove the 2 fixing screws (E) and take off the rotation supporter.



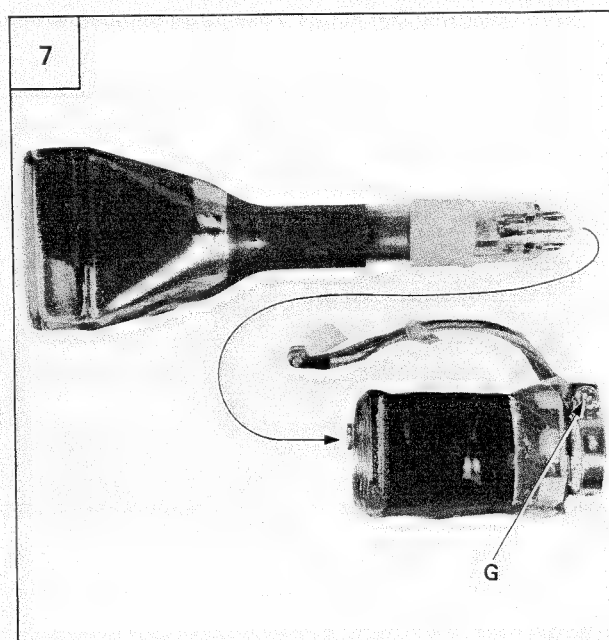
6. Loosen the 2 CRT retaining screws (F) and remove the CRT from the VF Tube.



5. Pull the CRT out of the multiplier, and remove the CRT socket from the CRT. Disconnect the CN3 of VF-22 board.

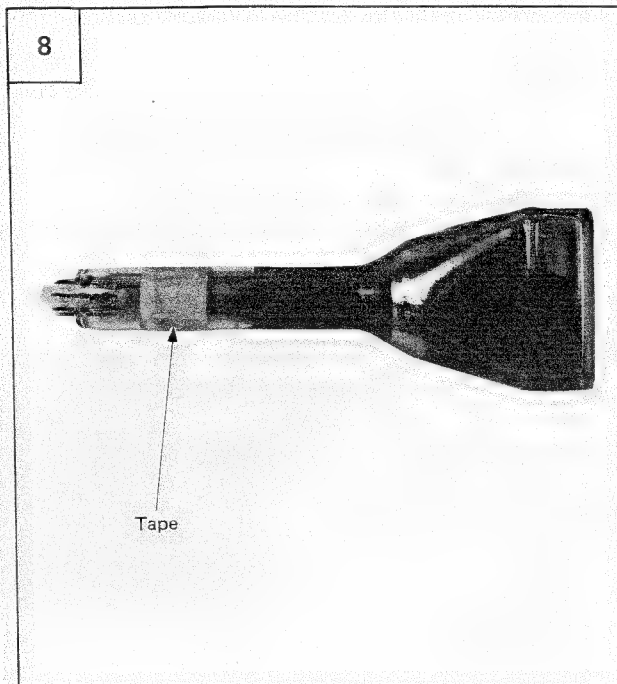


7. Loosen the Deflection Yoke retaining screw (G) and remove the Deflection Yoke from the CRT.



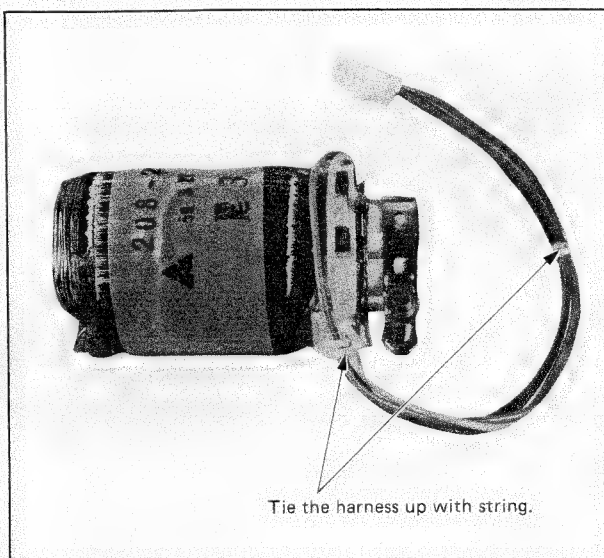


8. Tape around the neck of new CRT where the Deflection Yoke is to be attached, with a mending tape.



9. Assemble the viewfinder by reversing the steps.

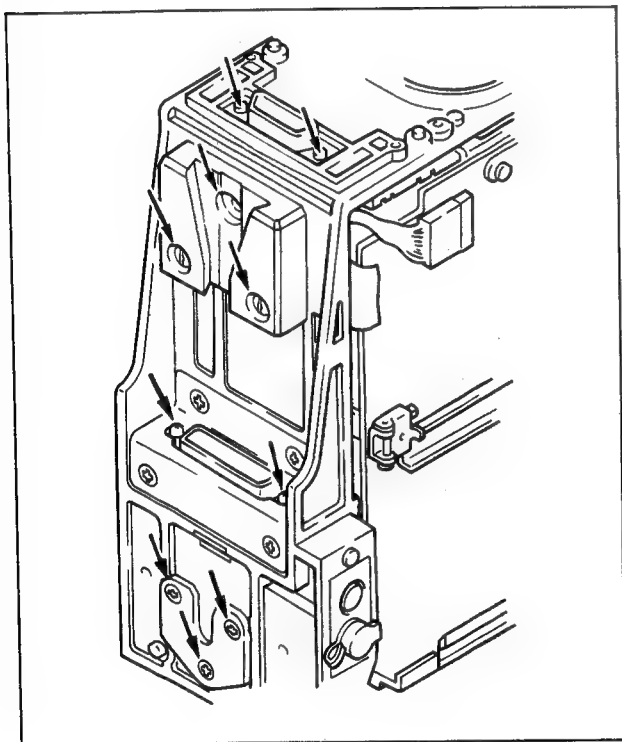
**Note:** If you replace a Deflection Yoke, please reform the new Deflection Yoke as shown below before replacement.



### 3-6. PRECAUTIONS ON REPLACEMENT OF VTR CONNECTOR (50-PIN CONNECTOR)

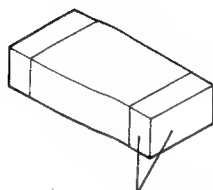
The VTR connector (50-pin connector) is attached using a high-precision special tool (CV positioning) so as to keep the accurate positioning relation with VTR mount (C shoe) and to dock with any of BVV-1/1A or BVV-1PS/1APS. Therefore, be sure not to loosen or remove the ten fixing screws shown in the figure below.

For replacement of the VTR connector (50-pin connector), contact your Sony dealer.



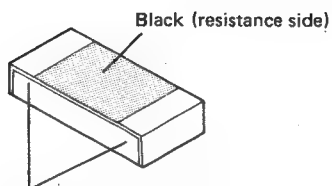
### 3-7. REPLACEMENT OF CHIP PARTS

Capacitor



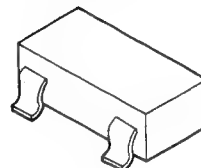
Covered with electrode.

Resistor



Not covered with electrode.

Diode and transistor



#### Tools required:

Soldering iron of approx. 20W

(Use a temperature controller, if possible, which can control the iron temperature to  $270 \pm 10^\circ\text{C}$ .)

Braided wire (SOLDER TAUL)

Solder (A solder of 0.6 mm in diameter is recommended.)

Tweezers

#### Soldering conditions:

Iron temperature of  $270 \pm 10^\circ\text{C}$

A connector should be soldered within 2 seconds.

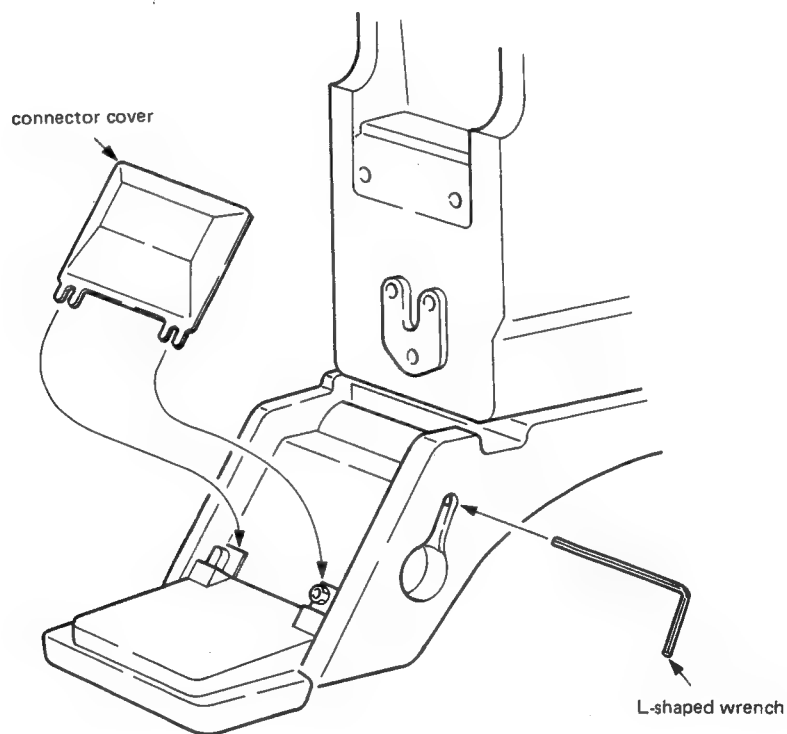
#### Procedures

1. To remove a resistor or capacitor, place the tip of a soldering iron on chip parts to heat the parts, and then move it horizontally for removal while being desoldered. For removal of a diode or transistor, heat the one side, with two pins, of chip parts at the same time, set the parts up when desoldered, and remove the two pins. And then, remove the pin on another side.
2. Absorb solder by using a braided wire to smooth the land surface of board after removal.
3. Confirm by visual check that no pattern of the removed chip parts is peeled off and no adjacent parts is damaged or bridged.
4. Perform a thin pretinning on the pattern.
5. Place new chip parts on the pattern to solder its both sides.

**The chip parts removed should not be used again.**

For details, refer to CHIP COMPONENTS MANUAL, Sony's parts No. 9-972-289-01 prepared by Sony Corporation.

1. Tripod attachment  
Tripod bracket is not necessary at attachment of tripod adaptor.
2. L-shaped wrench keeping  
New shoulder pad can keep L-shaped wrench which is used at attachment or removal of BVV-1/BVV-1 A, CA-3, CA-30 or CA-31. (refer to figure)
3. Connector cover keeping  
New shoulder pad has been provided keeping space for the connector cover which is removed at attachment of CA-30 or CA-31. (refer to figure)



## SECTION 4 ALIGNMENT

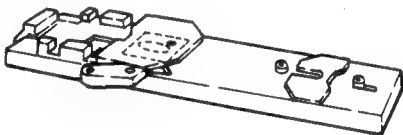
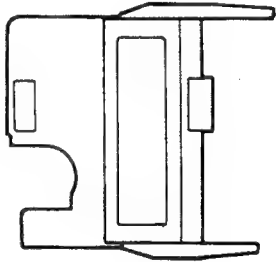
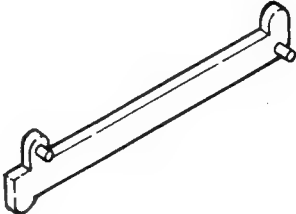
### BEFORE ADJUSTMENT

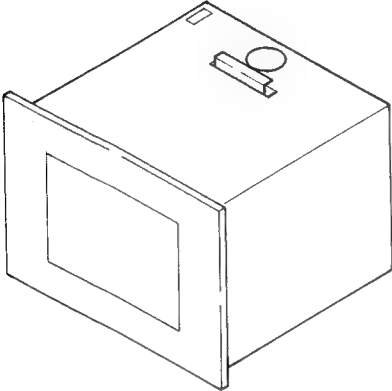
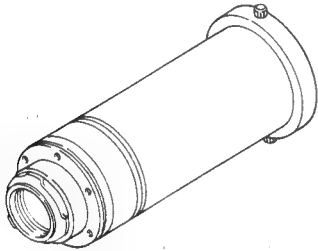
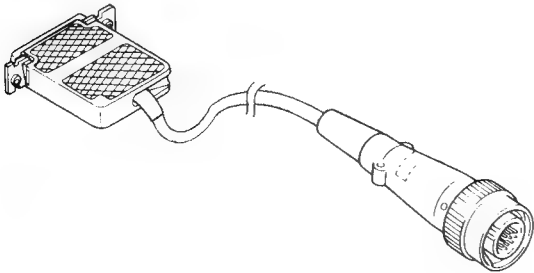
1. In Section 4-1, as a preparation for adjustment, equipment required, connection diagram, initial setting, etc. are described.
2. In Section 4-2, the essential adjustment points for overhauling including all the necessary adjustment points are described. Adjustment should be performed from the beginning to the end. A partial adjustment is not enough and it does not mean complete adjustment.
3. In Section 4-3, adjustment procedures required for partial adjustments are shown as flow charts. Be sure to make adjustment in accordance with the flow charts.

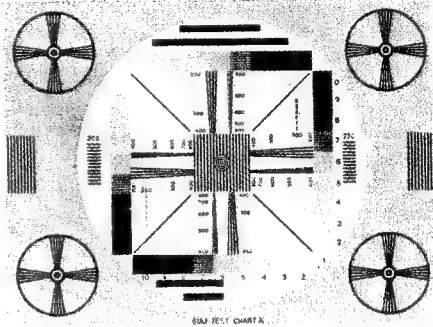
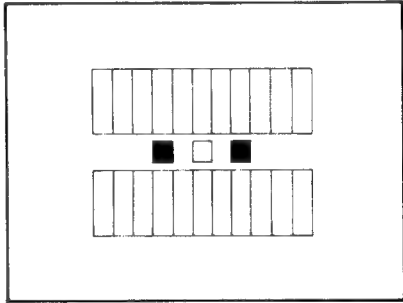
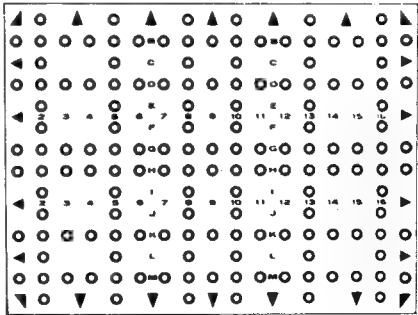
### 4-1. PREPARATION

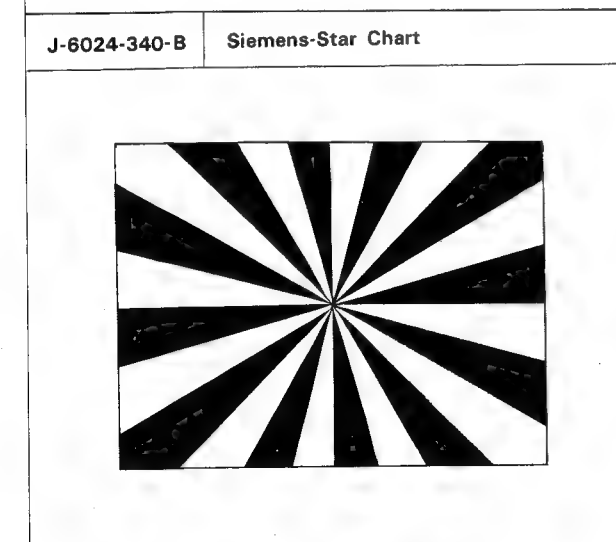
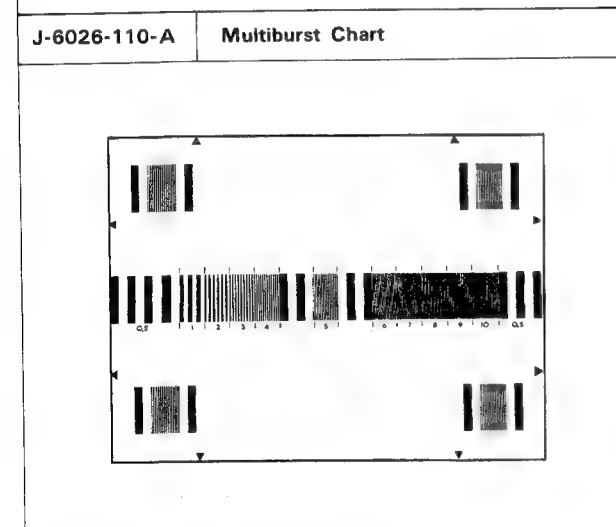
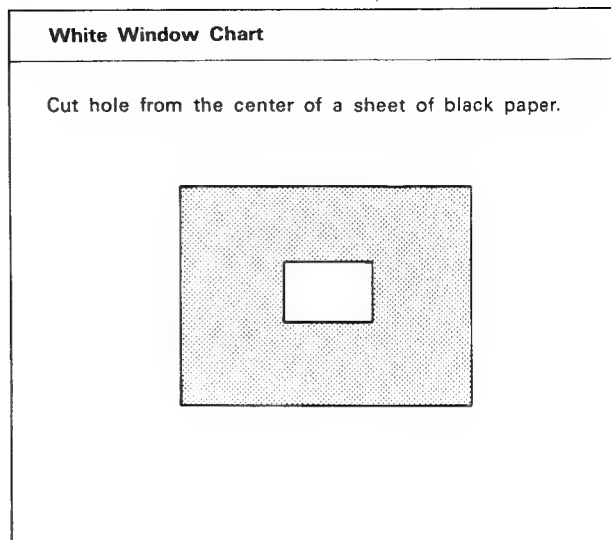
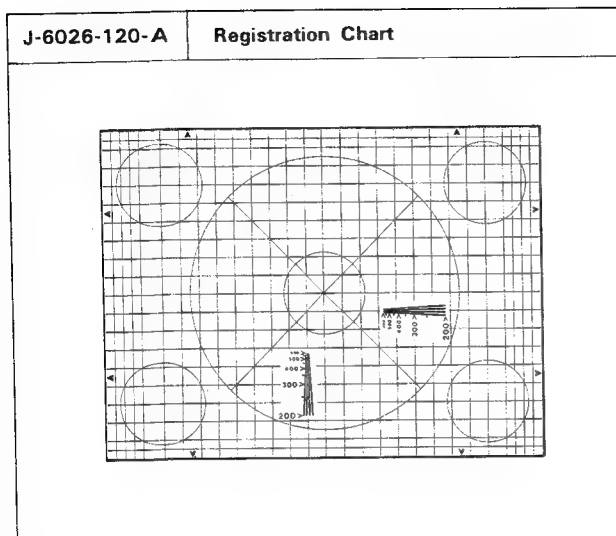
#### 4-1-1. Equipment Required

- Oscilloscope
- Waveform Monitor (WFM)
- Vectorscope
- B/W Monitor (H resolution: more than 700 TV lines)
- Test Signal Generator (Cross-hatching signal can be output.)
- Frequency Counter
- Digital Voltmeter
- CF Pulse Generator (Sony BVG-10P)
- AC Adaptor (Sony AC-500CE or CMA-7CE)
- Camera Adaptor (Sony CA-3 or CA-30P)

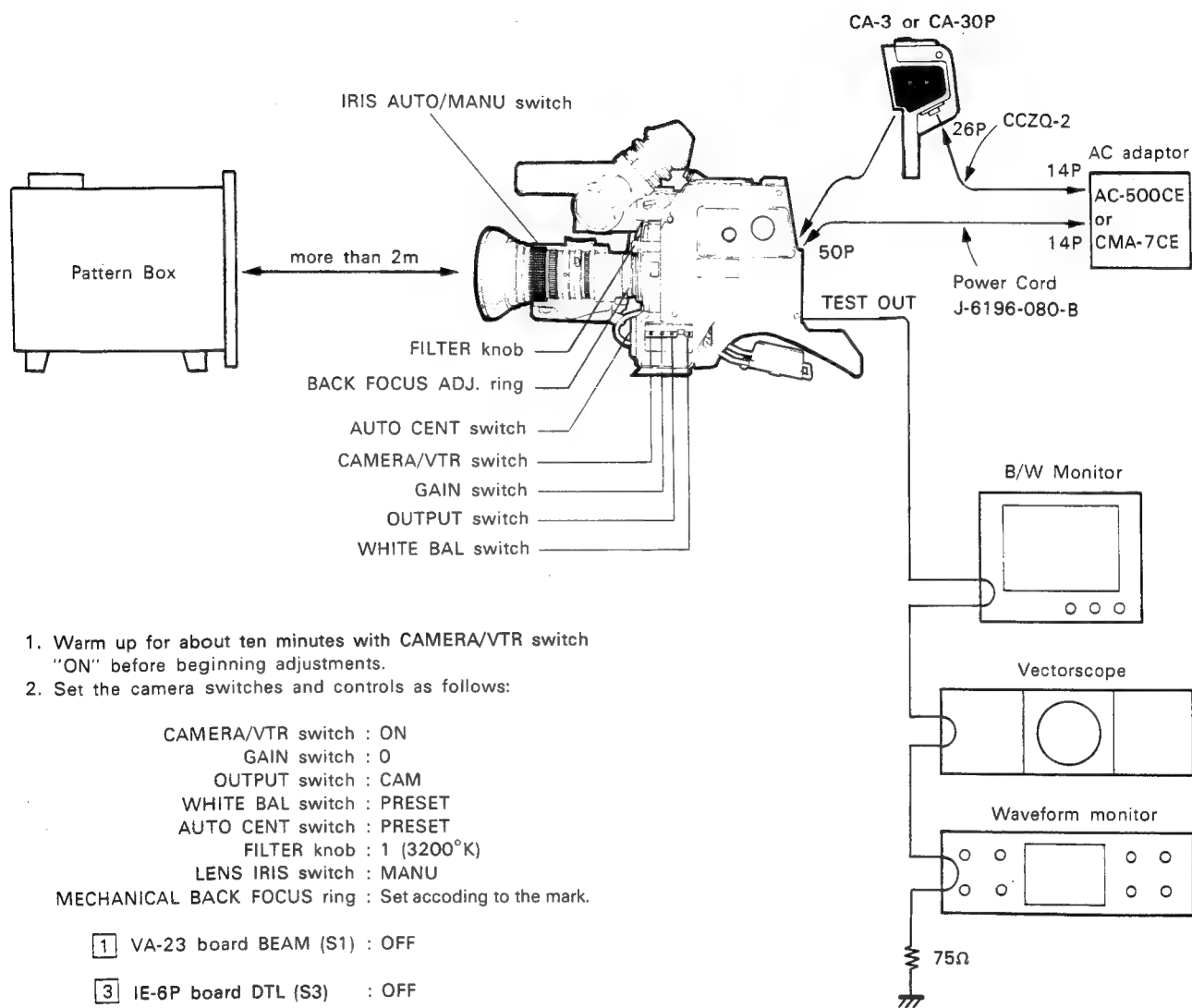
A-7408-015-C	Tripod Adaptor VCT-12
	
A-7511-898-A	Extension Board (EX-24)
	
X-3678-613-0	Board Extractor
	

J-6029-140-A	Pattern Box PTB-500 (AC90 to 240V)
(WITH COLOR-BAR CHART)	
	
J-6022-510-A	Pattern Projector
	
J-6196-080-B	DC Power Cord
	

J-6026-100-A	Resolution Chart
	
J-6026-130-A	Grayscale Chart
Stick the velvet (black) at both ends of white pattern in the center so as to avoid the light leakage.	
	
J-6021-890-A	Ball-Pattern Chart
	



#### 4-1-2. Connection and Initial Setting





## 4-2. ESSENTIAL ADJUSTMENT

This section describes alignment for overhauling. Be sure to make adjustment from the beginning through the end. When performing partial adjustments, adjustments should be made in accordance with the procedures of the flow charts shown in Section 4-3.

### [POWER SUPPLY ADJUSTMENT]

- Notes:**
- The adjustment is not necessary if error is within 3% of rated voltage.
  - When this adjustment is made, all of the following will be required.
  - Step 4-2-1 through step 4-2-4, should be adjusted in order.

To be extended : PS-41 board

#### 4-2-1. +9.5V Adjustment

Equipment : Digital voltmeter  
 To be measured : TP2/PS-41 board  
 (↗ GND/extension board)  
 To be adjusted : ⚙ RV2/PS-41 board  
 Specification :  $+9.5 \pm 0.01\text{V DC}$

#### 4-2-2. +9.0V Adjustment

Equipment : Digital voltmeter  
 To be measured : A19 or B19 (↗ GND)/extension board  
 To be adjusted : ⚙ RV3/PS-41 board  
 Specification :  $+9.0 \pm 0.01\text{V DC}$

#### 4-2-3. +7.3V Adjustment

Equipment : Digital voltmeter  
 To be measured : TP3/PS-41 board  
 (↗ GND/extension board)  
 To be adjusted : ⚙ RV1/PS-41 board  
 Specification :  $+7.3 \pm 0.01\text{V DC}$

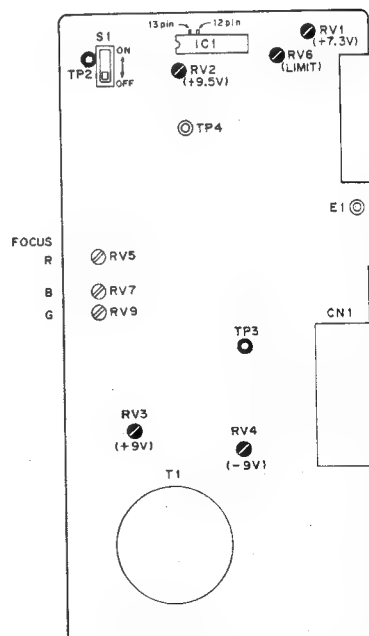
#### 4-2-4. -9.0V Adjustment

Equipment : Digital voltmeter  
 To be measured : A1 or B1 (↗ GND)/extension board  
 To be adjusted : ⚙ RV4/PS-41 board  
 Specification :  $-9.0 \pm 0.01\text{V DC}$

#### 4-2-5. Overcurrent Detect Adjustment

Equipment : Digital voltmeter  
 (↗ GND/extension board)

1. Measure the voltage at pin 13 of IC1/PS-41 board and take note this value.
2. Adjust ⚙ RV6/PS-41 board so that the voltage at pin 12 of IC1/PS-41 board is 0.03V less than voltage measured in Step 1.



PS-41 board (component side)

## [SYNC GENERATOR ADJUSTMENT]

- Notes:**
- Warm up the camera for about 15 minutes before adjustment.
  - Be sure in INT mode (Not in GENLOCK mode) Check not to be in the GENLOCK mode.

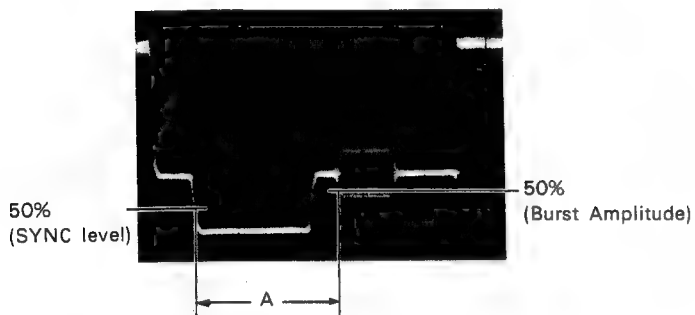
### 4-2-6. Subcarrier Frequency Adjustment

Equipment : Frequency counter  
Connect an inductor (more than 100  $\mu$ H) in series with the probe of a counter.

To be measured : TP1 (カ E1)/SG-63A board  
To be adjusted : ②X1/SG-63A board  
Specification : 4,433,619  $\pm$  3 Hz

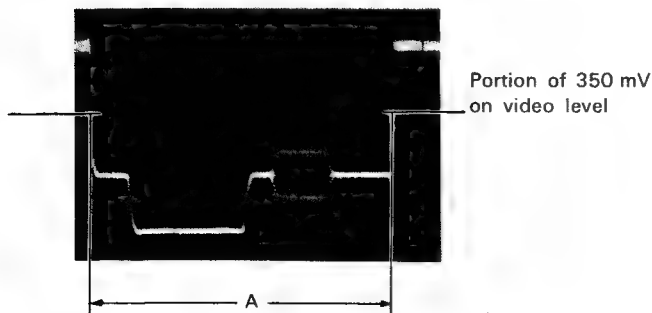
### 4-2-7. Color Burst Adjustment

Preparation: S8 [REG/ENC] /PR-75 board  $\rightarrow$  ENC  
Equipment : Oscilloscope or waveform monitor  
To be measured : TEST OUT terminal  
To be adjusted : ②RV3/SG-63A board  
Specification : A = 5.6  $\pm$  0.1  $\mu$ sec.



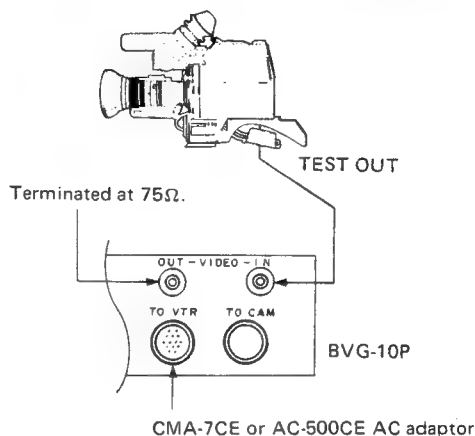
### 4-2-8. H. BLKG Phase Adjustment

Equipment : Oscilloscope  
To be measured : TEST OUT terminal  
Preparation : Shoot entire white of pattern box with auto position.  
S8 [REG/ENC] /PR-75 board  $\rightarrow$  ENC  
Lens iris : Adjust the iris control so that the video level at TEST OUT terminal is 700 mV.  
To be adjusted : S3/SG-63A board  
Specification : A = 12.0  $\pm$  0.25  $\mu$ s

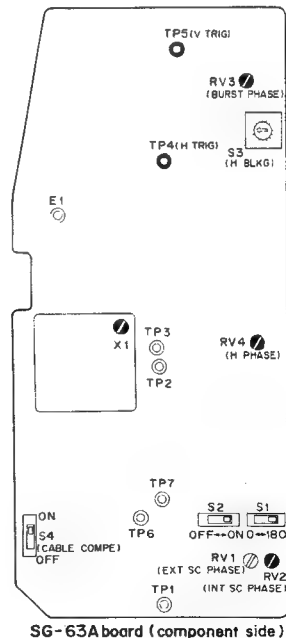
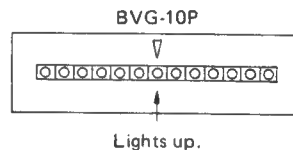


### 4-2-9. Internal SC Phase Adjustment

Equipment: CF pulse generator (BVG-10P)  
Connection:

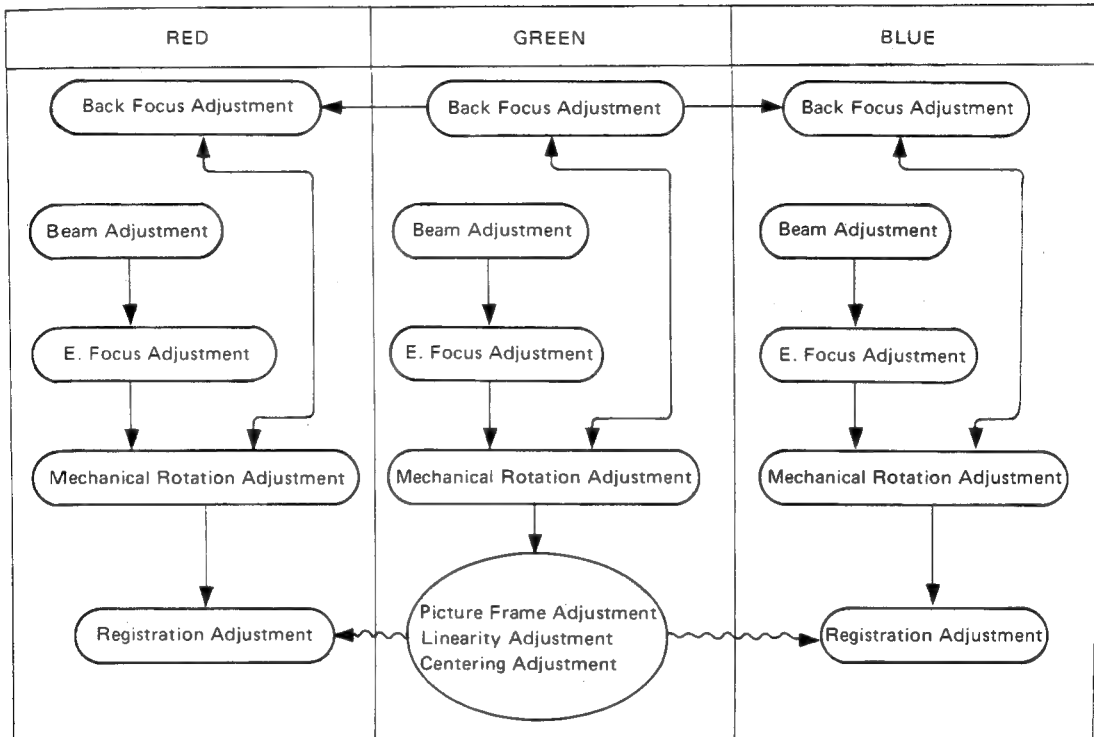


1. Select switch of the BVG-10P to SOURCE CHECK.
2. Adjust the ②RV2/SG-63A board so that the center LED lamp of the BVG-10P lights.



## [REGISTRATION ADJUSTMENT]

For registration adjustment, each adjustment effect each other, therefore, the repeated adjustment will be required. Following table shows general idea of a relation for each adjustment. The coarse adjustment is as described below. Following table is shown the selection of the switches.



Each switch setting in registration adjustment in order to adjust the registration.

S3 **DTL** /IE-6P board → OFF

S8 **REG/ENC** /PR-75 board → REG

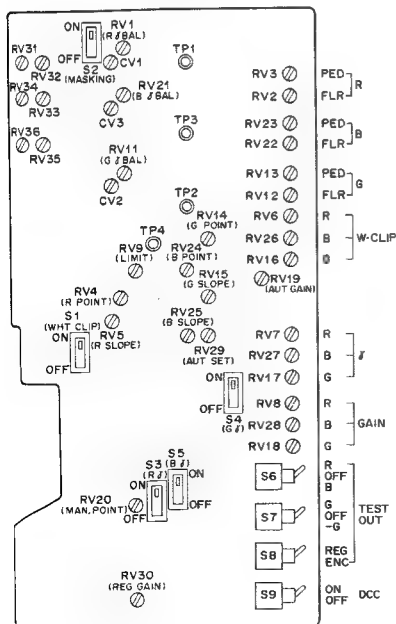
**Notes:** Meaning of arrows on above table:



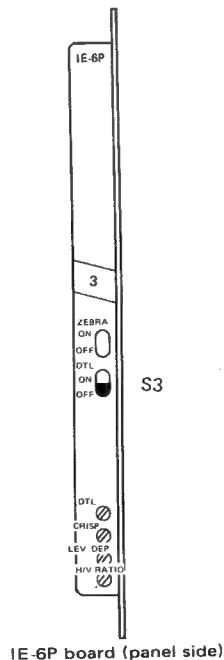
If A is adjusted, B should be checked or require to adjust.



Adjustment A effecting to B. (B conforms to A.)



PR-75 board (component side)

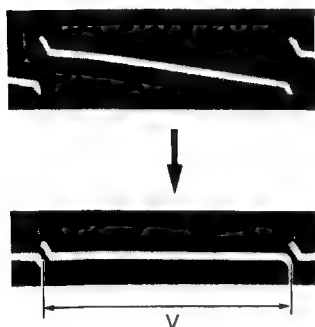


IE-6P board (panel side)

#### 4-2-10. V. Deflection Balance Adjustment

**Note:** Calibrate the oscilloscope CH1 and CH2 gain.

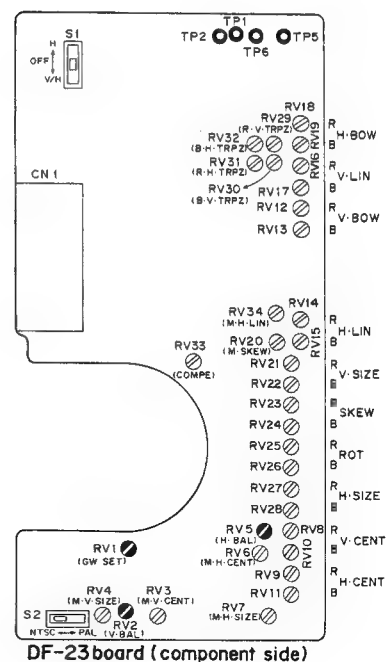
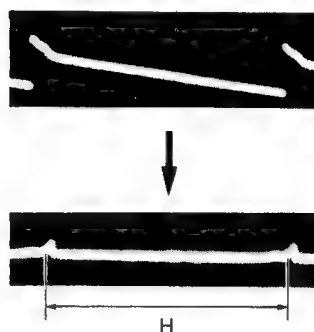
To be extended : DF-23 board  
 Equipment : Dual trace oscilloscope  
 To be measured : CH1 → TP1  
                       CH2 → TP2 } /DF-23 board  
                       (≠ E1)  
 Mode : ADD  
 Trigger : TP5 (V. TRIG)/SG-63A board  
 To be adjusted : ● RV2/DF-23 board



#### 4-2-11. H. Deflection Balance Adjustment

**Note:** Calibrate the oscilloscope  
 CH1 and CH2 gain.

To be extended : DF-23 board  
 Equipment : Dual trace oscilloscope  
 To be measured : CH1 → TP5  
                       CH2 → TP6 } /DF-23 board  
                       (≠ E1)  
 Mode : ADD  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : ● RV5/DF-23 board



#### 4-2-12. Gw Voltage Adjustment

**Note:** Calibrate the oscilloscope CH1 and CH2 gain.

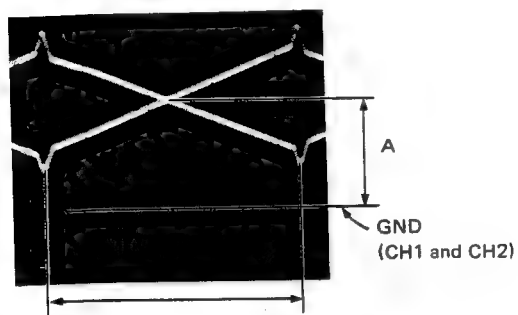
To be extended : DF-23 board

Equipment : Oscilloscope (DC mode)

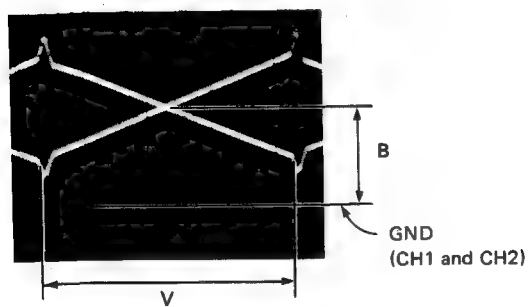
Scope Mode : CHOP

Scope Trigger : TP4 (H. TRIG) } /SG-63A board  
TP5 (V. TRIG) }

Test point : CH1 → TP5 } /DF-23 board  
CH2 → TP6 }



CH1 → TP1 } /DF-23 board  
CH2 → TP2 }



Spec. :  $A = B$

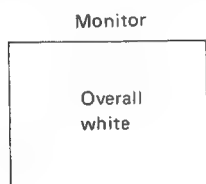
Adj. point : ⓪RV1/DF-23 board

#### 4-2-13. G Beam (ABO) Adjustment

**Note:** Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart  
 Equipment : Oscilloscope  
 To be extended : VA-23 board  
 Preparations :  $\odot$  RV11 (ABO GAIN)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV12 (SLOPE)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV15 (POINT)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV26 (CLIP)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV30 (G O/S LEV)  $\rightarrow$  Fully  $\odot$  } VA-23 board

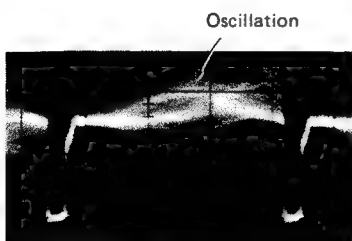
1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.



2. Adjust the lens iris so that the video level of the B9/VA-23 board is 0.4p-p. Next adjust the  $\odot$  RV14 (BLK CLIP)/VA-23 board so that the video waveform is on the point of appearing on the TP5/VA-23 board.
3. Open the lens iris gradually and adjust the  $\odot$  RV13 (G.BEAM)/VA-23 board so that the video waveform of B9/VA-23 board just starts to clip at 0.8 Vp-p.



4. Turn the  $\odot$  RV11 (ABO GAIN)/VA-23 board so that the waveform of B9 oscillates slightly.



When the waveform does not oscillate even if the RV11 (ABO GAIN) is turned fully, open the lens iris three more stops than F when B9 level is 0.4V, and set the RV11 just before lack of beam. In this case, adjustments of 5 and after are not necessary.

5. Stop oscillating by Adjusting the  $\odot$  RV15 (POINT)/VA-23 board.



6. Open the lens iris three more stops than F when B9 level is 0.4V, and adjust the  $\odot$  RV12 (SLOPE) so that the video waveform of B9/VA-23 board is not limited by lack of beam and does not oscillate.



7. Adjust the  $\odot$  RV26 (CLIP)/VA-23 board so that the waveform is clipped.

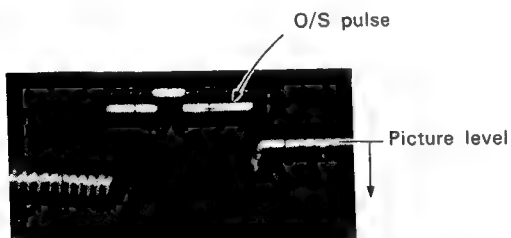


8. Display on the oscilloscope the B17/VA-23 in the vicinity of the V blanking by using VD as external trigger.

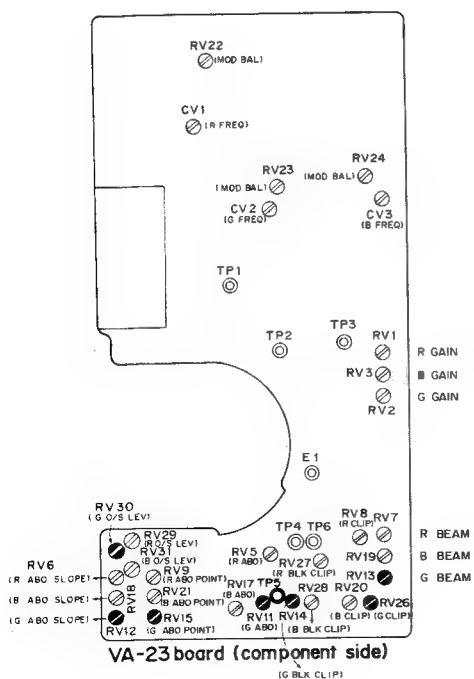
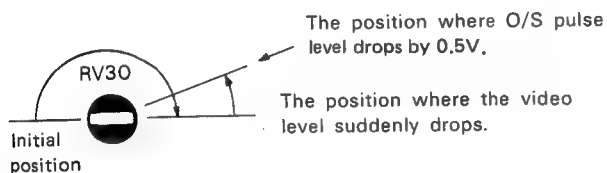


(Lens iris closed)

9. There exists a point where the picture level first few lines after O/S pulse is suddenly dropped by increasing the O/S pulse level with the RV30/VA-23 board while keeping the lens iris open with the object matter being entirely white.  
(If the picture level does not lower even when the O/S pulse level is increased, turn the RV30 fully clockwise.)



When the point where the picture level suddenly drops appears, then return the RV30 to a position where drops by 0.5V of the O/S pulse level.







#### 4-2-14. R Beam (ABO) Adjustment

**Note:** Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart

Equipment : Oscilloscope

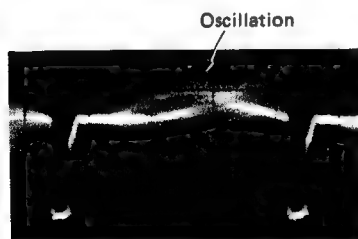
To be extended : VA-23 board

Preparations :  $\odot$  RV5 (ABO GAIN)  $\rightarrow$  Fully  $\odot$  } /VA-23 board  
 $\odot$  RV6 (SLOPE)  $\rightarrow$  Fully  $\odot$  }  
 $\odot$  RV9 (POINT)  $\rightarrow$  Fully  $\odot$  }  
 $\odot$  RV8 (CLIP)  $\rightarrow$  Fully  $\odot$  }  
 $\odot$  RV29 (R O/S LEV)  $\rightarrow$  Fully  $\odot$  }

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the lens iris so that the video level of the B7/VA-23 board is 0.3 Vp-p. Next adjust the  $\odot$  RV27 (BLK CLIP)/VA-23 board so that the video waveform is on the point of appearing on the TP4/VA-23 board.
3. Open the lens iris gradually and adjust the  $\odot$  RV7 (R.BEAM)/VA-23 board so that the video waveform of B7/VA-23 board just starts to clip at 0.6 Vp-p.



4. Turn the  $\odot$  RV5 (ABO GAIN)/VA-23 board so that the waveform of B7 oscillates slightly.



If the waveform does not oscillate even if the RV5 (ABO GAIN) is turned fully, open the lens iris three more stops than F when B9 level is 0.4V, and set the RV5 just before lack of beam. In this case, adjustments of 5 and after are not necessary.

5. Stop oscillating by adjusting the  $\odot$  RV9 (POINT)/VA-23 board.



6. Open the lens iris three more stops than F when B9 level is 0.4V, and adjust the  $\odot$  RV6 (SLOPE) so that the video waveform of B7/VA-23 board does not lack beam or oscillate.



7. Adjust the  $\odot$  RV8 (CLIP)/VA-23 board so that the waveform is clipped.

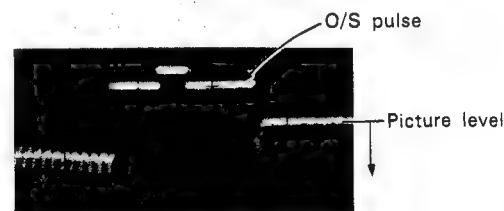


8. Display on the oscilloscope the A17/VA-23 in the vicinity of the V blanking by using VD as external trigger.

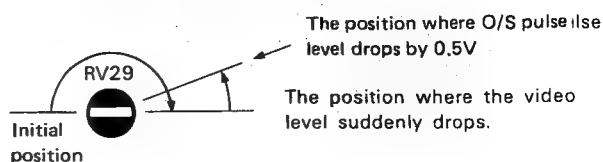


(Lens iris close)

9. There exists a point where the picture level is suddenly dropped by increasing the O/S pulse level with the  $\odot$  RV29/VA-23 board while keeping the lens iris open with the object matter being entirely white. (If the picture level does not lower even when the O/S pulse level is increased, turn the RV29 fully clockwise.)



When the point where the picture level suddenly drops appears, returns the  $\odot$  RV29 to the position where the drops by 0.5V the O/S pulse level.



#### 4-2-15. B Beam (ABO) Adjustment

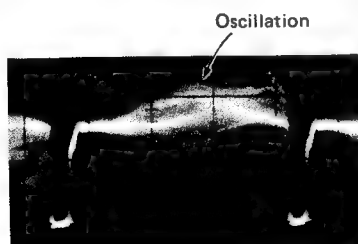
**Note:** Avoid continuous shooting of bright object in order to protect the tubes, for a long period.

Object : White window chart  
 Equipment : Oscilloscope  
 To be extended : VA-23 board  
 Preparations :  $\odot$  RV17 (ABO GAIN)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV18 (SLOPE)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV21 (POINT)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV20 (CLIP)  $\rightarrow$  Fully  $\odot$   
 $\odot$  RV31 (B O/S LEV)  $\rightarrow$  Fully  $\odot$  } /VA-23 board

1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
2. Adjust the lens iris so that the video level of the A11/VA-23 board is 0.3 Vp-p. Next adjust the  $\odot$ RV28 (BLK CLIP)/VA-23 board so that the video waveform is on the point of appearing on the TP6/VA-23 board.
3. Open the lens iris gradually and adjust the  $\odot$ RV19 [B. BEAM] /VA-23 board so that the video waveform of A11/VA-23 board just starts to clip at 0.6 Vp-p.



4. Turn the  $\odot$ RV17 (ABO GAIN)/VA-23 board so that the waveform of A11 oscillates slightly.

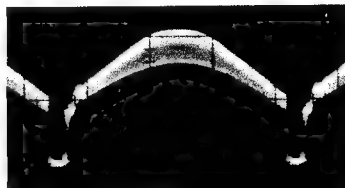


If the waveform does not oscillate even if the RV17 (ABO GAIN) is turned fully, open the lens iris three more stops than F when B9 level is 0.4V, and set the RV17 just before lack of beam. In this case, adjustments of 5 and after are not necessary.

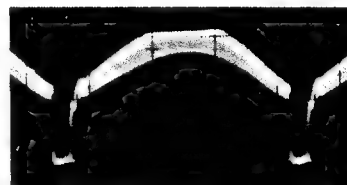
5. Stop oscillating by Adjusting the  $\odot$ RV21 (POINT)/VA-23 board.



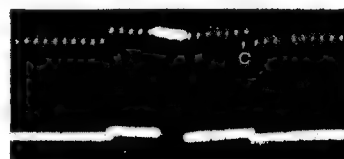
6. Open the lens iris three more stops than F when B9 level is 0.4V, and adjust the  $\odot$ RV18 (SLOPE) so that the video waveform of A11/VA-23 board does not lack beam or oscillate.



7. Adjust the  $\odot$ RV20 (CLIP)/VA-23 board so that the waveform is clipped.

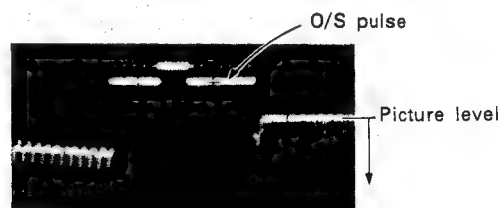


8. Display on the oscilloscope the A18/VA-23 in the vicinity of the V blanking by using VD as external trigger.

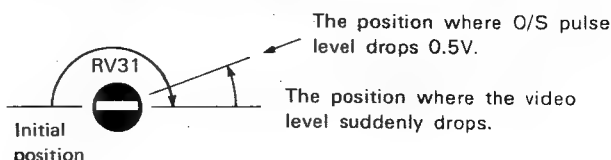


(Lens iris close)

9. There exists a point where the picture level is suddenly dropped by increasing the O/S pulse level with the  $\odot$ RV31/VA-23 board while keeping the lens iris open with the object matter being entirely white.  
 (If the picture level does not lower even when the O/S pulse level is increased, turns the RV31 fully clockwise.)



When the point where the picture level suddenly drops appears, then return the  $\odot$ RV31 to the position where the drops by 0.5V the O/S pulse level.

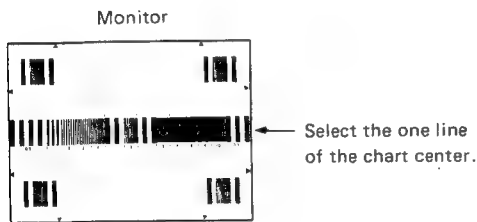


#### 4-2-16. G-CH E Focus Adjustment

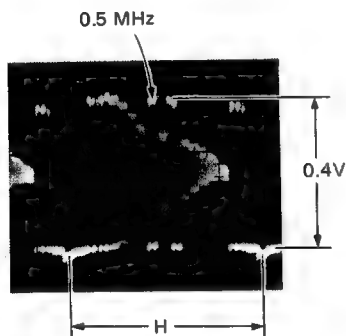
**Note:** From this adjustment 4-2-24. G-CH Linearity Adjustment, adjustment should be performed repeatedly until it satisfies the specified values.

Object : Multiburst chart  
Equipment : Oscilloscope  
To be extended : VA-23 board  
Trigger : TP5 (V. TRIG)/SG-63A board

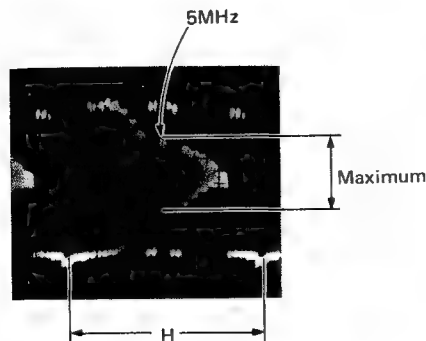
1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.



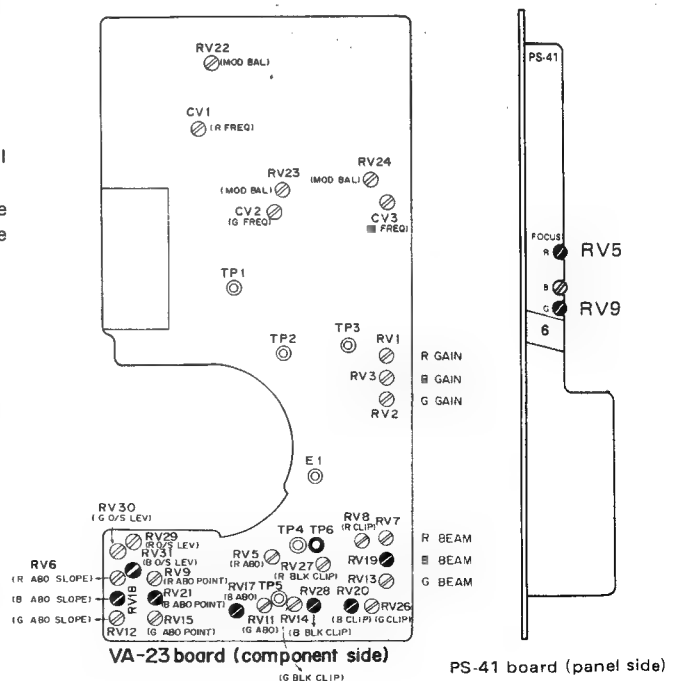
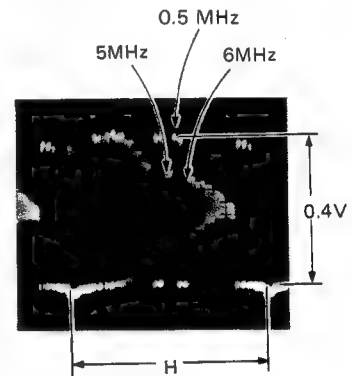
3. Adjust the focus control so that the waveform signal amplitude at 5 MHz is maximized.
4. Adjust the RV9 G. FOCUS /PS-41 board so that the waveform signal amplitudes at both 5 MHz and 6 MHz are maximized.



#### 4-2-17. R-CH E Focus Adjustment

Object : Multiburst chart  
Equipment : Oscilloscope  
To be extended : VA-23 board  
Trigger : TP5 (V. TRIG)/SG-63A board

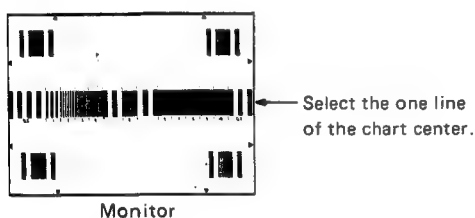
1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.
2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Adjust the focus control so that the waveform signal amplitude corresponding to 5 MHz at B7/extension board is maximized.
4. Adjust the RV5 R. FOCUS /PS-41 board so that the waveform signal amplitudes corresponding to both 5 MHz and 6 MHz at B7 are maximized.



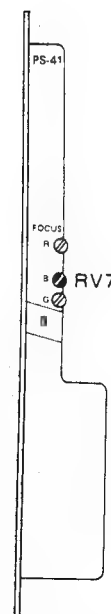
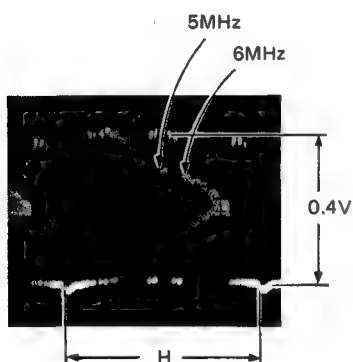
#### 4-2-18. B-CH E Focus Adjustment

Object: Multiburst chart  
 Equipment: Oscilloscope  
 To be extended: VA-23 board  
 Trigger: TP5 (V. TRIG)/SG-63A board

1. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Adjust the focus control so that the waveform signal amplitude corresponding to 5 MHz at A11/extension board is maximized.
4. Adjust the  $\odot$  RV7 **B. FOCUS** /PS-41 board so that the waveform signal amplitudes corresponding to both 5 MHz and 6 MHz at A11 are maximized.



PS-41 board (panel side)

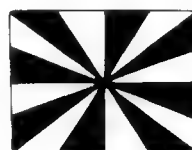
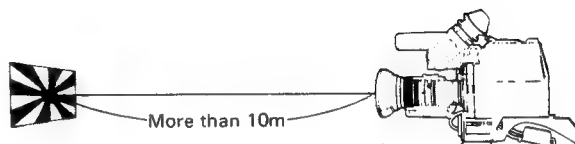
#### 4-2-19. G-CH Back Focus Adjustment

- Notes:** 1. Never turn the back focus adjusting screw shown below except when replacing the camera tube of G channel. Adjust the back focus of lens for back focus adjustment. However, when the camera tube is replaced or the adjustment cannot be made on the lens side, set the lens back focus ring at the marked position so as to make the following adjustment.
2. From this adjustment to 4-2-25. G-CH Linearity Adjustment, adjustment should be performed repeatedly until it satisfies the specified values.

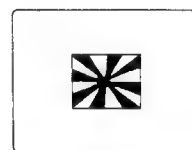
Object : Siemens-star chart  
 Preparations: S8 REG/ENC → REG  
                   S7 G/-G → G  
                   S6 R/B → OFF } /PR-75 board  
 Lens iris : Open

1. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Optically focus the image so as to obtain the maximum resolution.
2. Set the zoom control at WIDE so as to obtain the minimum multiplication factor. Do not optically focus the image at this time. Check whether the image is focused on the monitor while turning the zoom control from TELE to WIDE. If the image is not focused, properly set at back focus as follows:
3. Carefully loosen the setscrew shown below. When the zooming mechanism is set at WIDE, turn the back focus adjusting screw.
4. Tighten the setscrew after repeating Step 1 through Step 3 several times.

**Note:** When the zoom control is set at WIDE, be careful not to be exposed to strong light such as a fluorescent lamp.

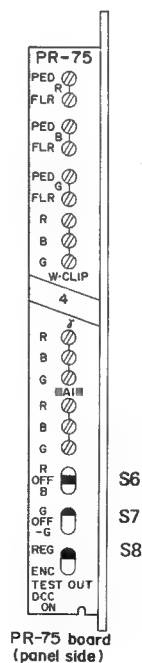
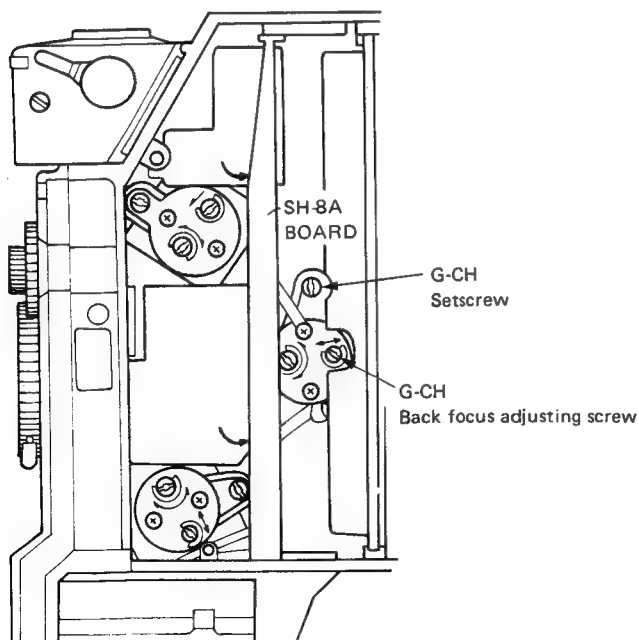


(TELE)



(WIDE)

Monitor screen



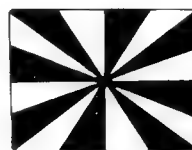
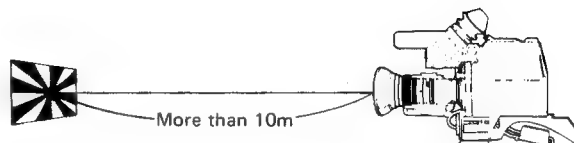
#### 4-2-20. R-CH Back Focus Adjustment

**Note:** Prior to this adjustment, confirm that the back focus in the green channel is set at a proper position. If not, first of all, make the back focus adjustment in the green channel.

Object: Siemens-star chart  
Preparation: S8 **REG/ENC** /PR-75 board → REG  
Lens iris: Open

1. S7 **G/-G** → G } /PR-75 board  
S6 **R/B** → OFF }
2. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Do not touch the focus control after setting its position in this step during this adjustment.
3. S7 **G/-G** → OFF } /PR-75 board  
S6 **G/B** → R }
4. Set the zoom control at TELE so as to obtain the maximum multiplication factor. If the image is not focused, carefully loosen the setscrew shown below and tighten the setscrew after the back focus adjusting screw is set at the optimum focus position.
5. When the zoom control is set at WIDE from TELE, make sure if the image is focused.

**Note:** If there is still unacceptable back focus track is error between G channel and R channel, off set lens back focus adjustment a little from lens back focus warker, then repeat adjustment from section 4-2-19 to section 4-2-20.  
In some cases this adjustment may give better result.

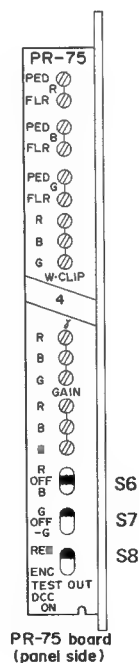
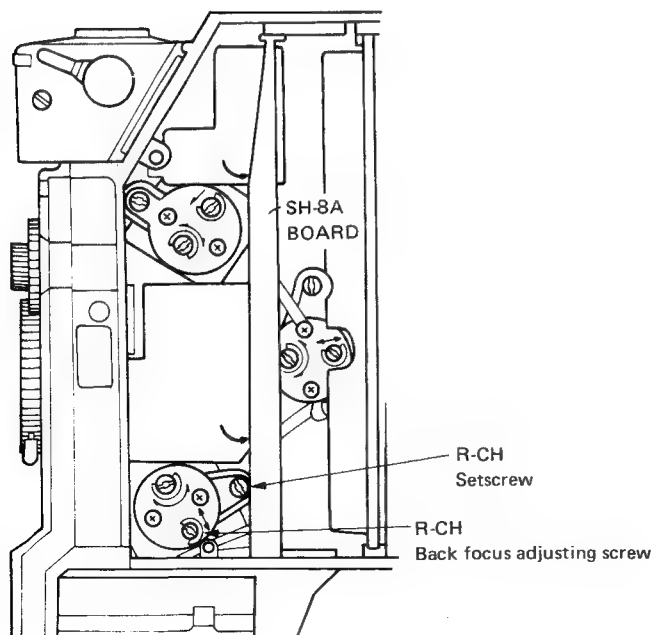


(TELE)



(WIDE)

Monitor screen



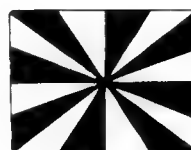
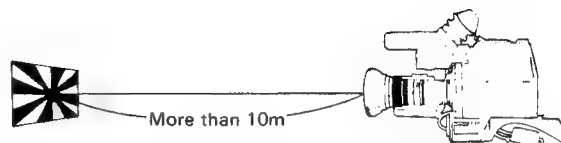
#### 4-2-21. B-CH Back Focus Adjustment

**Note:** Prior to this adjustment, confirm that the back focus in the green channel is set at a proper position. If not, first of all, make the back focus adjustment in the green channel.

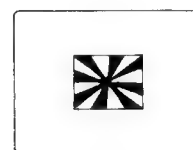
Object: Siemens-Star chart  
Preparation: S8 [REG/ENC] /PR-75 board → REG  
Lens iris: Open

1. S7  $\begin{matrix} \boxed{G/-G} \\ \boxed{R/B} \end{matrix} \rightarrow \begin{matrix} G \\ OFF \end{matrix} \} \text{ /PR-75 board}$
2. Set the zoom control at TELE so as to obtain the maximum multiplication factor. Do not touch the focus control after setting its position in this step during this adjustment.
3. S7  $\begin{matrix} \boxed{G/-G} \\ \boxed{G/B} \end{matrix} \rightarrow \begin{matrix} OFF \\ B \end{matrix} \} \text{ /PR-75 board}$
4. Set the zoom control at TELE so as to obtain the maximum multiplication factor. If the image is not focused, carefully loosen the setscrew shown below and tighten the setscrew after the back focus adjusting screw is set at the optimum focus position.
5. When the zoom control is set at WIDE from TELE, make sure if the image is focused.

**Note:** If there is still unacceptable back focus track is error between G channel and B channel, off set lens back focus adjustment a little from lens back focus warker, then repeat adjustment from section 4-2-20 to section 4-2-21.  
In some cases this adjustment may give better result.

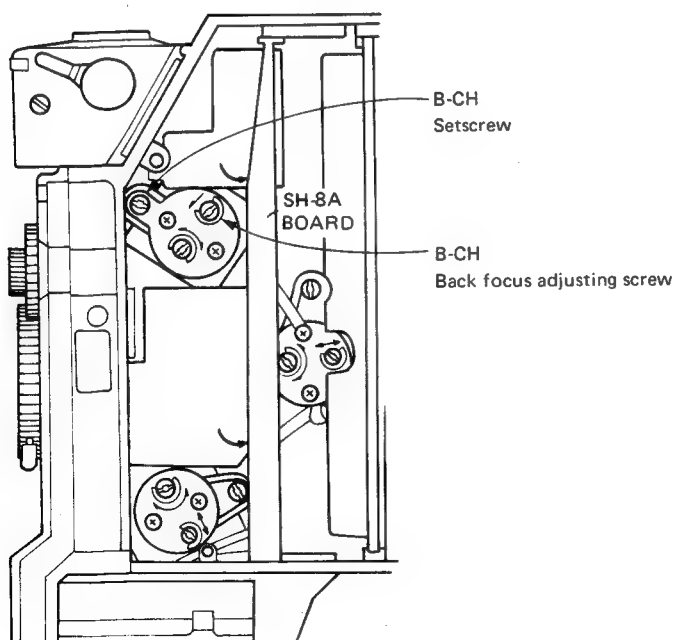


(TELE)



(WIDE)

Monitor screen



#### 4-2-22. G-CH Rotation Adjustment

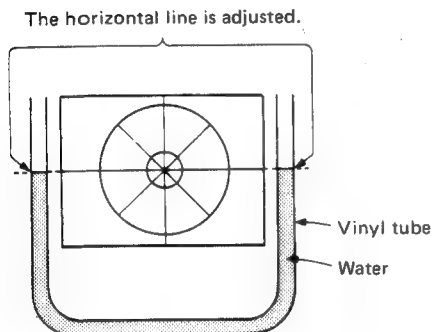
**Note:** After this adjustment, check the back focus adjustment in the green channel.

Object: Registration chart  
 Preparations: S8  $\boxed{\text{REG/ENC}}$  → REG  
 S7  $\boxed{\text{G/-G}}$  → G  
 S6  $\boxed{\text{R/B}}$  → OFF } /PR-75 board

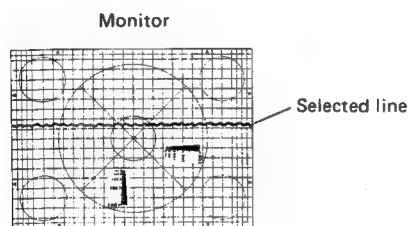
Set the tripod adaptor horizontally by using a level, and then mount the camera.

Set the registration chart at the horizontal position.

The use of a transparent vinyl tube containing water, instead of a level, makes it possible to set the registration chart correctly at the horizontal position.

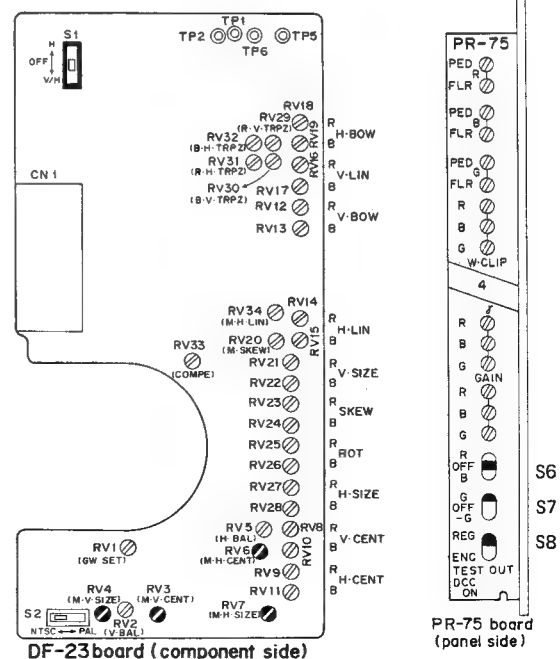
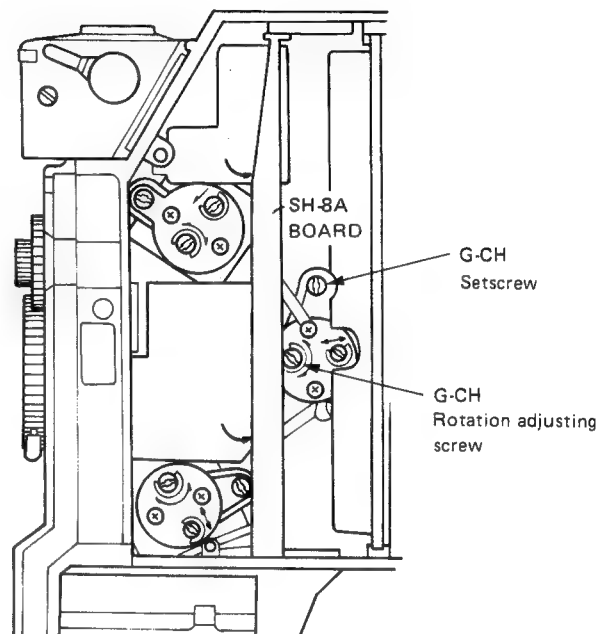


1. Select the lines by using a Waveform monitor and confirm that the horizontal line of the registration chart is in parallel with the selected line on the monitor.



2. If these 2 lines are not in parallel, make the following adjustments.
3. Carefully loosen the setscrew shown above.  
 If the setscrew is loosened too much, back focus will tend to be inaccurate when rotation adjustment is done. Be careful not to loosen it too much.  
 (Turning angle: approx.  $90^\circ \sim 100^\circ$ )

4. Adjust the rotation adjusting screw so that the selected line on the monitor is in parallel with the horizontal line of the registration chart.
5. Carefully tighten the setscrew.





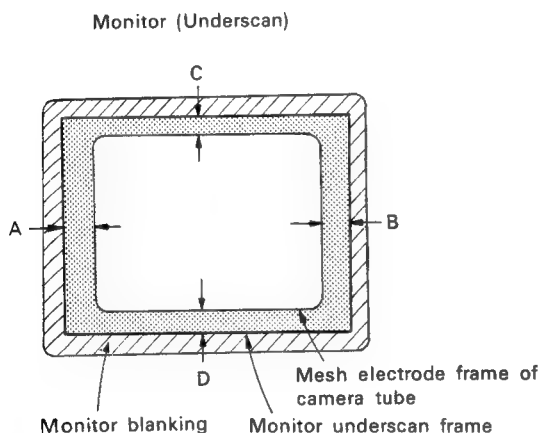
#### 4-2-23. G-CH Picture Frame Adjustment

Equipment : Pattern projector  
Registration chart

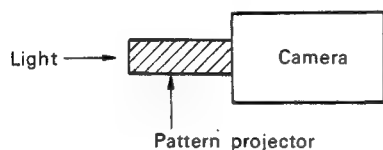
Preparations : Lens iris closed  
S8 REG/ENC → REG  
S7 G/-G → G  
S6 R/B → OFF } /PR-75 board

Adjustment :

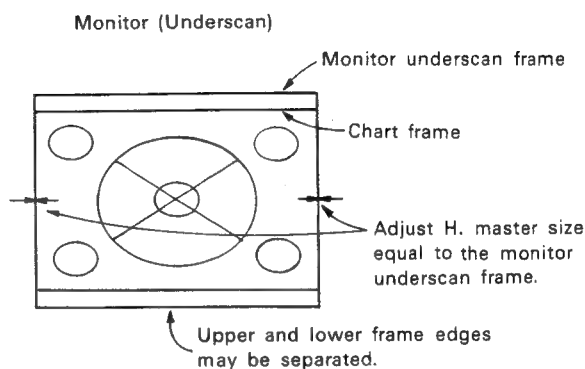
1. S1 OVER SCAN /DF-23 board. → H/V.
2. Set 'A' to be equal to 'B' by adjusting  $\odot$ RV6 (H MAST CENT)/DF-23 board.  
Set 'C' to be equal to 'D' by adjusting  $\odot$ RV3 (V MAST CENT)/DF-23 board.



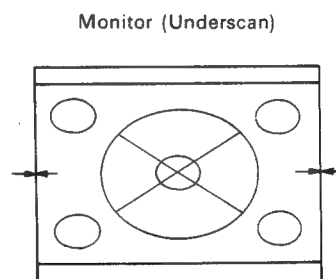
3. Set S1 OVER SCAN /DF-23 board at OFF.
4. Remove the lens from the camera and place the pattern projector in position.



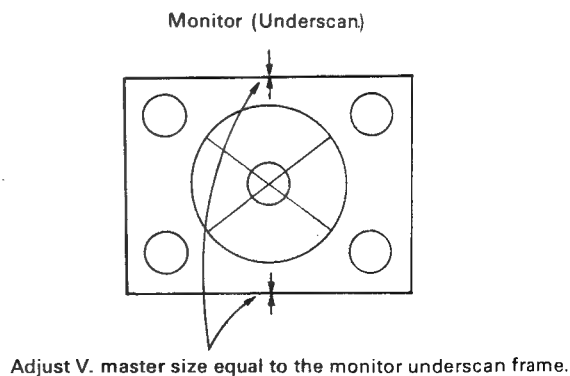
5. Set the chart frame of the pattern projector onto the underscan frame of the monitor by using  $\odot$ RV7 (H MAST SIZE). If horizontal centering is not established, move the chart of the jig until horizontal centering is established.



6. Remove the jig from the camera and set the lens in position.
7. Shoot the registration chart and place the left and right edges of the registration chart over the entire underscanned picture frame by using the zoom lens. Correctly face the camera and chart during this adjustment.



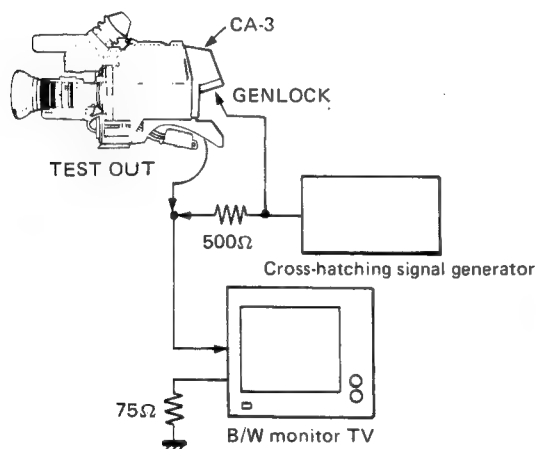
8. Place the upper and lower edges of the chart over the entire underscanned picture frame by using  $\odot$ RV4 (V MAST SIZE)/DF-23 board.



#### 4-2-24. G-CH Linearity Adjustment

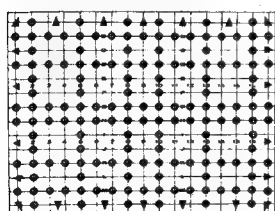
- Object: Ball-pattern chart  
 Equipment: Cross-hatching signal generator  
 Preparations: S8  $\frac{\text{REG/ENC}}{\text{REG}} \rightarrow \text{REG}$   
 S7  $\frac{\text{G/-G}}{\text{G}} \rightarrow \text{G}$   
 S6  $\frac{\text{R/B}}{\text{OFF}} \rightarrow \text{OFF}$  } /PR-75 board
- The camera should be located right in front of the pattern box.
  - Use the pattern box in the AUTO mode.

**When CA-3 is used**  
 (Connection)

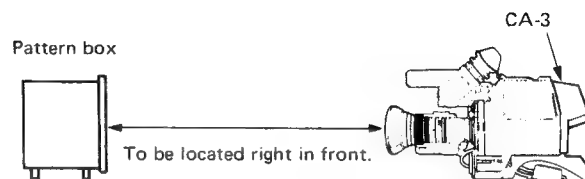


1. Adjust the zoom control so that the ball chart frame touches the underscanned picture frame on the monitor.
2. Center the cross-hatching pattern at the center of the monitor screen by using  $\odot$  RV4/SG-63A board.
3. Set the intersection points of orthogonal lines on a cross-hatching pattern at the centers of circles by using  $\odot$  RV3,  $\odot$  RV4,  $\odot$  RV6,  $\odot$  RV7,  $\odot$  RV20, and  $\odot$  RV34/DF-23 board.
4. When the number (13) of horizontal lines in the cross-hatching signal is not the same as the number (14) of marks  $\odot$  in the ball chart, stretch the vertical size by using the  $\odot$  RV4/DF-23 board. After the linearity adjustment is completed, place the ball chart over the entire frame, again, by using the  $\odot$  RV4.

Monitor (Underscanning)

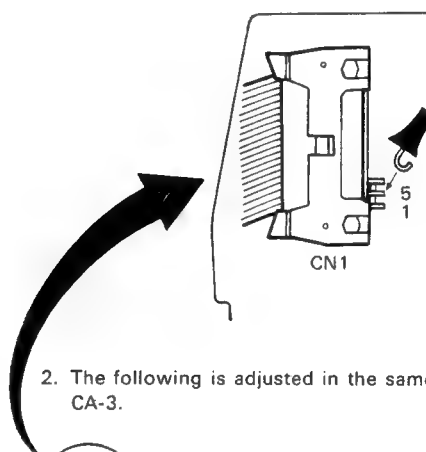


**Note:** After this adjustment has been completed, return to 4-2-19. G-CH Back Focus Adjustment and adjustment should be repeatedly performed until all the required items satisfy the specified values.

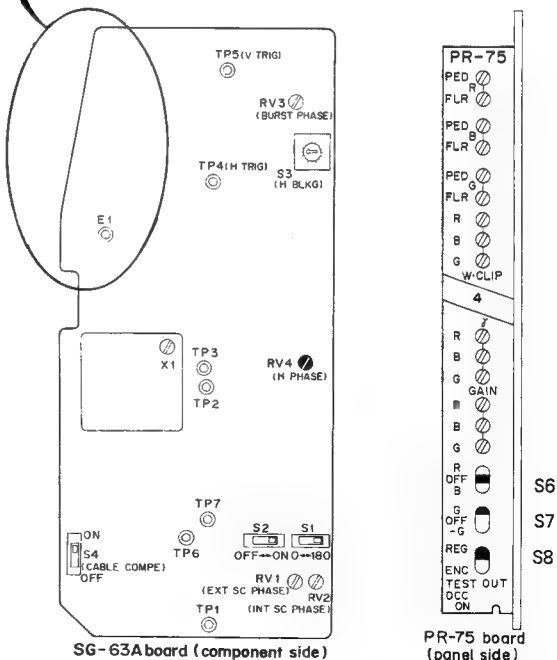


**When CA-3 is not used**

1. Supply the cross-hatching signal fed to the GENLOCK terminal of CA-3 to CN1 pin 5 on the SG-63A board.



2. The following is adjusted in the same manner as the use of CA-3.



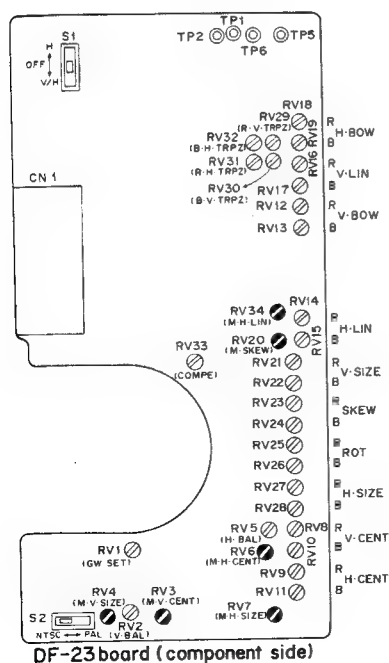
## 4-2-25. Registration Adjustment

### Remarks on the color monitor

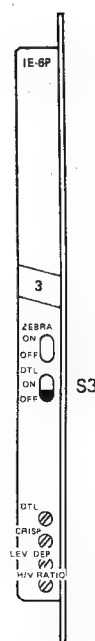
Use the B/W monitor. If necessary, use the color monitor after convergence adjustment. Fully turn the chrominance level adjuster on the color monitor counterclockwise, or set the monitor to the B/W mode before starting the adjustment.

### Preparations before registration adjustment

1. Set the lens iris at close after the power is turned on, and then warm up the camera for about 30 minutes before adjustment.
2. Adjust the zoom control so that the registration chart frame touches the underscanned picture frame on the monitor.
3. Use the pattern box in the AUTO mode.
4. Filter position → 1
5. S3 **DTL** /IE-6P board → OFF
6. After confirmed the sec. 4-2-72 Iris Level Adjustment, set the lens iris switch at AUTO position.
7. S8 **REG/ENC** /PR-75 board → REG
8. AUTO CENT switch → PRESET



DF-23 board (component side)



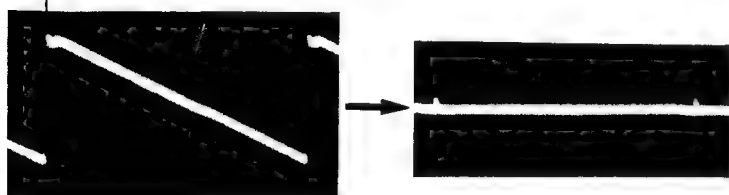
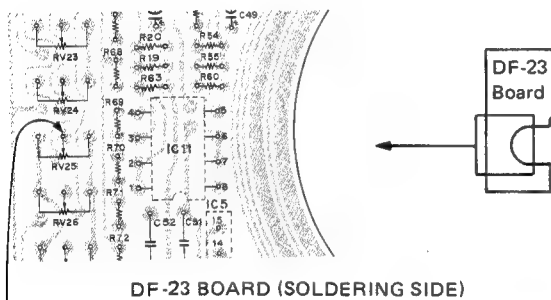
IE-6P board (panel side)

#### 4-2-26. R-CH Rotation Adjustment

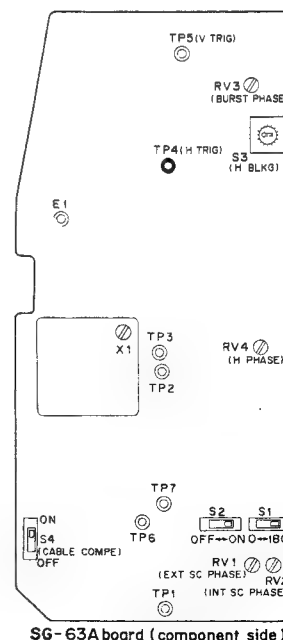
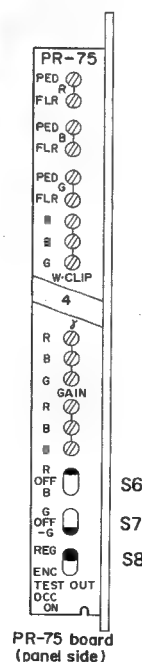
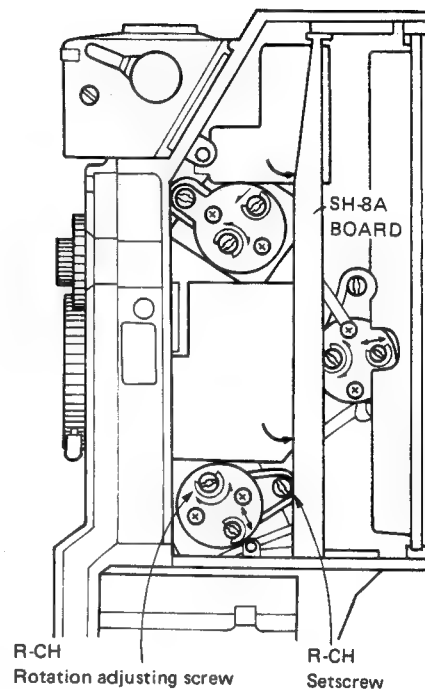
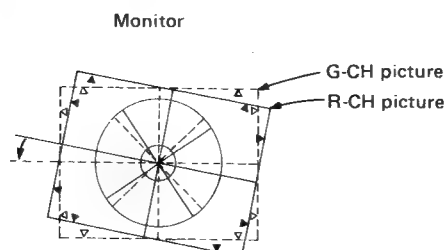
**Note:** The R-CH Rotation adjustment exerts influence on the 4-2-20. R-CH Back Focus Adjustment, so be sure to check the R-CH back focus adjustment after the Rotation adjustment is completed.

Object : Registration chart  
Measuring equipment: Oscilloscope  
To be extended : DF-23 board  
Trigger : TP4 (H. TRIG)/SG-63A board

1. S7  $\frac{G}{-G} \rightarrow -G$   
S6  $\frac{R}{B} \rightarrow R$  } /PR-75 board
2. Check whether 2 horizontal lines at the center of the R and -G picture are in parallel or overlapped.  
If these 2 lines are not in parallel or overlapped, make the following adjustments.
3. Connect the probe of an oscilloscope to the center of the  $\text{RV25 } \frac{R}{R.ROT}$  /DF-23 board (refer to the figure below) and adjust the  $\text{RV25 } \frac{R}{R.ROT}$  so that the corrected waveform disappears on the monitor.



4. Carefully loosen the setscrew shown above.  
Adjust the rotation adjusting screw so that the horizontal line at the center of the R-CH picture is overlapped or in parallel with the picture in the green channel.
5. Carefully tighten the setscrew.



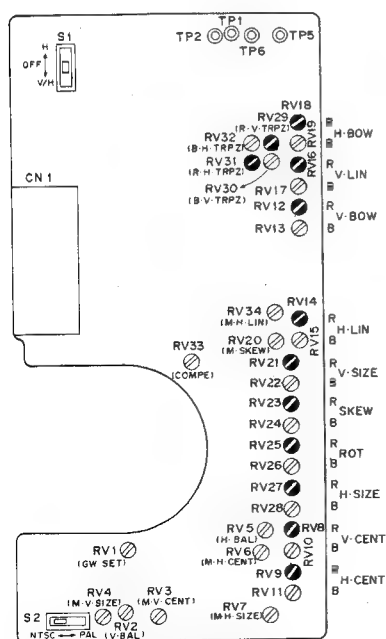
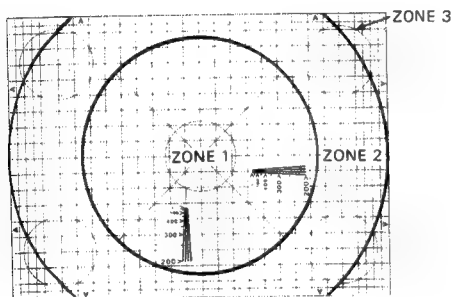
## 4-2-27. R-CH Registration Adjustment

Object : Registration chart  
 Preparation : S3 **DTL** switch/IE-6 board → OFF  
 Lens Iris switch → AUTO  
 AUTO CENT switch → PRESET  
 S8 **REG/ENC** → REG  
 S7 **G/-G** → -G } /PR-75 board  
 S6 **R/B** → R }

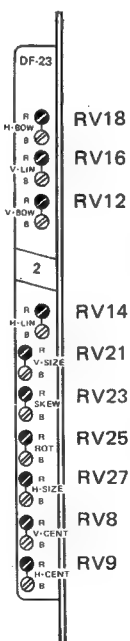
Adjust : To make the picture divergence between G-CH and R-CH to be a minimum, use the volume controls shown in figure below.

Spec : Zone 1 0.1%  
 Zone 2 0.15%  
 Zone 3 0.3%

(Width of the line in the chart = 0.2%)

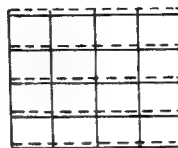


DF-23 board (component side)

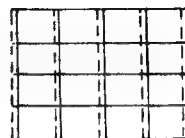


DF-23 board (panel side)

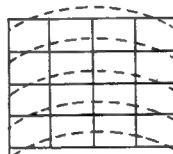
RV8 (V. CENT)



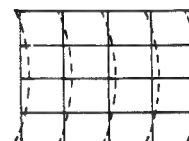
RV9 (H. CENT)



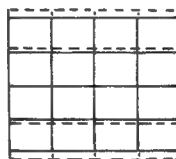
RV12 (V. BOW)



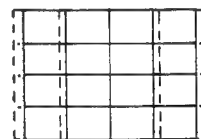
RV18 (H. BOW)



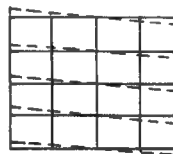
RV21 (V. SIZE)



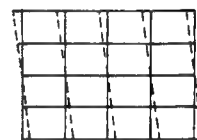
RV27 (H. SIZE)



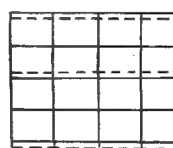
RV25 (ROT)



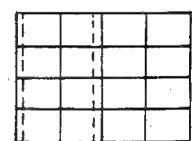
RV23 (SKEW)



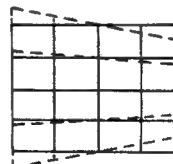
RV16 (V. LIN)



RV14 (H. LIN)



RV29 (V. TRPZ)



RV31 (H. TRPZ)

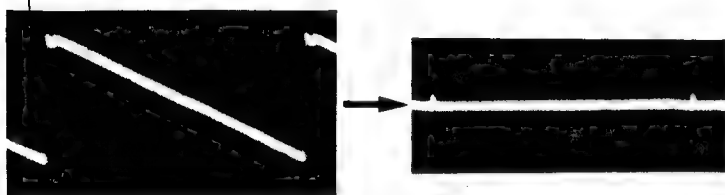
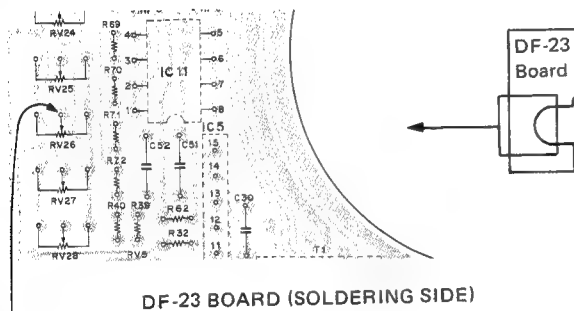


#### 4-2-28. B-CH Rotation Adjustment

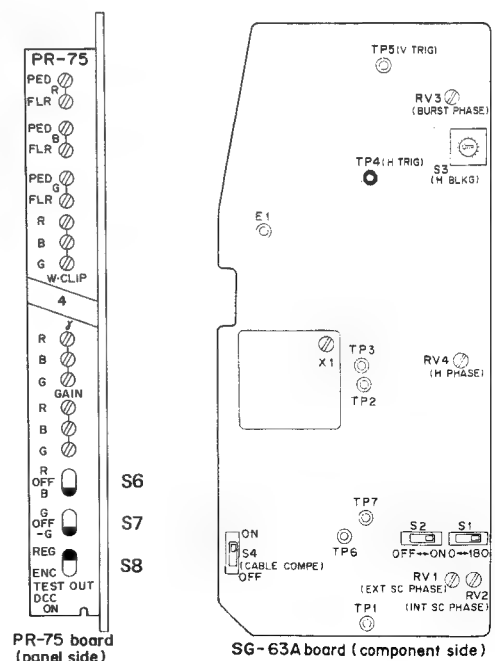
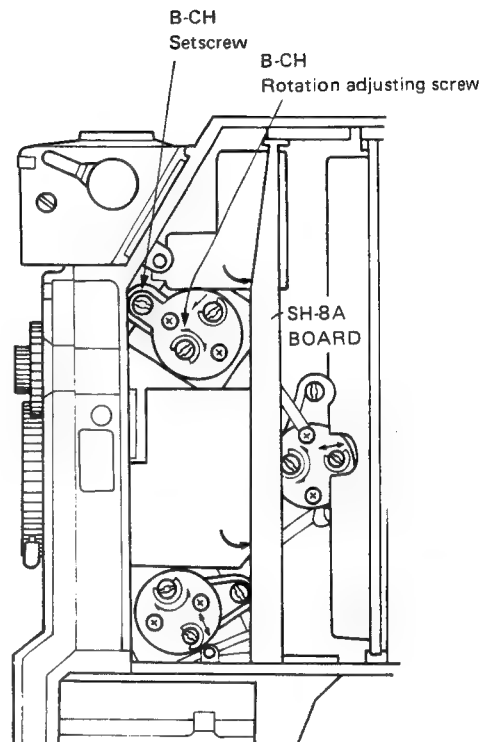
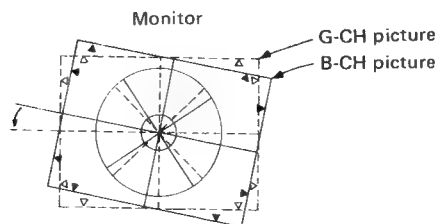
**Note:** The B-CH Rotation adjustment exerts influence on the 4-2-21. B-CH Back Focus Adjustment, so be sure to check the B-CH back focus adjustment after the Rotation adjustment is completed.

Object: Registration chart  
Equipment: Oscilloscope  
To be extended: DF-23 board  
Trigger: TP4 (H. TRIG)/SG-63A board

1. S7  $\frac{G}{-G} \rightarrow -G$   
S6  $\frac{R}{B} \rightarrow B$  } /PR-75 board
2. Check whether 2 horizontal lines at the center of the B and -G picture are in parallel or overlapped.  
If these 2 lines are not in parallel or overlapped, make the following adjustments.
3. Connect the probe of an oscilloscope to the center of the  $\text{RV26 } \frac{B}{-G}$  /DF-23 board (refer to the figure below) and adjust the  $\text{RV26 } \frac{B}{-G}$  so that the corrected waveform disappears on the monitor.



4. Carefully loosen the setscrew shown above.  
Adjust the rotation adjusting screw so that the horizontal line at the center of the B-CH picture is overlapped or in parallel with the picture in the green channel.
5. Carefully tighten the setscrew.



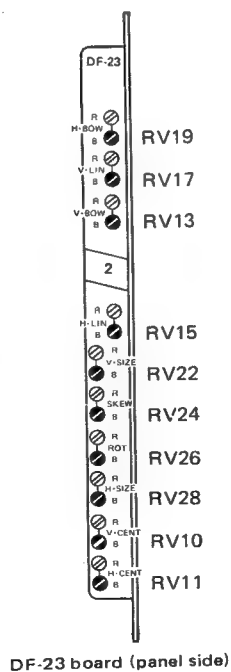
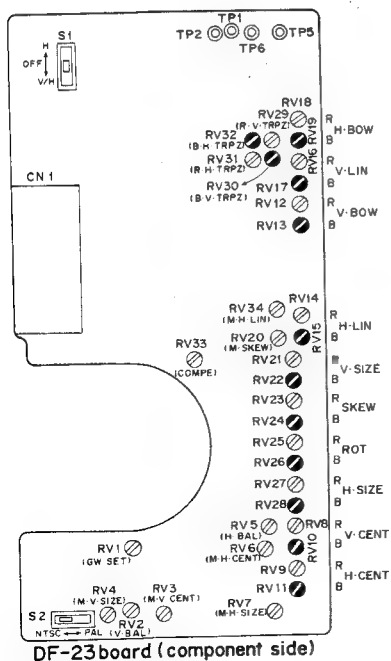
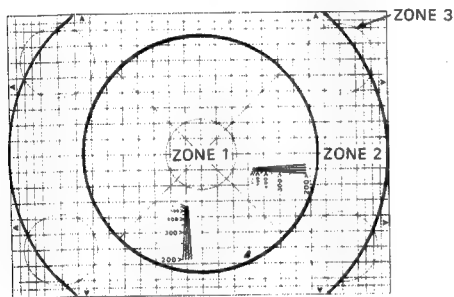
#### 4-2-29. B-CH Registration Adjustment

Object : Registration chert  
 Preparation : S3 **DTL** switch/IE-6 board → OFF  
 Lens Iris switch → AUTO  
 AUTO CENT switch → PRESET  
 S8 **REG/ENC** → REG  
 S7 **G/-G** → -G } /PR-75 board  
 S6 **R/B** → B }

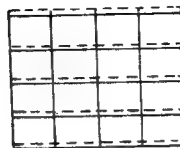
Adjust : To make the picture divergence between G-CH and B-CH to be a minimum, use the volume controls shown in figure below.

Spec : Zone 1 0.1%  
 Zone 2 0.15%  
 Zone 3 0.3%

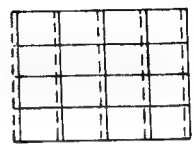
(Width of the line in the chart = 0.2%)



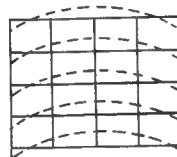
RV10 (V. CENT)



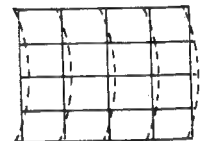
RV11 (H. CENT)



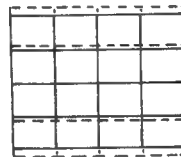
RV13 (V. BOW)



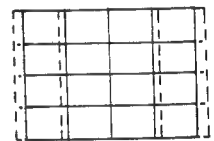
RV19 (H. BOW)



RV22 (V. SIZE)



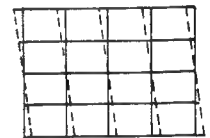
RV28 (H. SIZE)



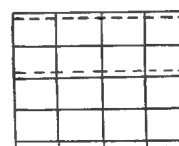
RV26 (ROT)



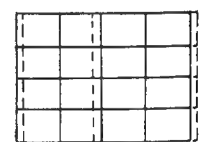
RV24 (SKEW)



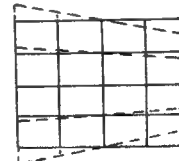
RV17 (V. LIN)



RV15 (H. LIN)



RV30 (V. TRPZ)



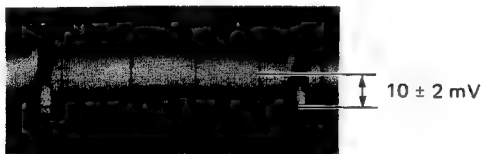
RV32 (H. TRPZ)



### 4-3. VIDEO SIGNAL ADJUSTMENT

#### 4-3-1. Bias Light Adjustment

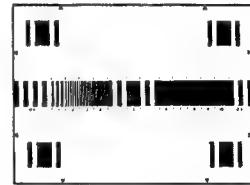
Lens : Close  
 Measuring equipment : Oscilloscope  
 To be extended : VA-23 board  
 Preparations : S2 **BIAS LIGHT**/SH-8A board → ON  
 S1 **TEST**/SH-8A board → OFF  
 To be measured : B9 (H. TRIG)/Extension board  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV31/SH-8A board  
 Specification :  $10 \pm 2$  mV



#### 4-3-2. GREEN PA Frequency Response at high Frequencies Adjustment

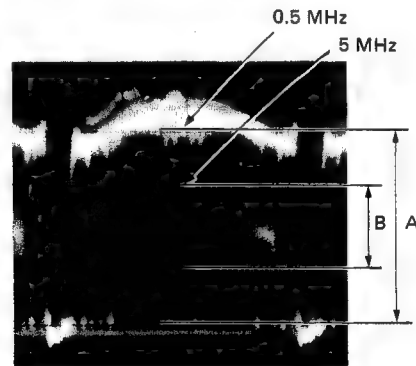
Object : Multiburst chart  
 Measuring equipment : Oscilloscope  
 Preparation : Remove the shielding case on the PA-37 board  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

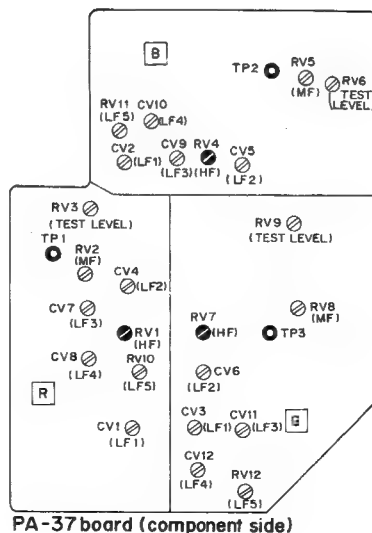
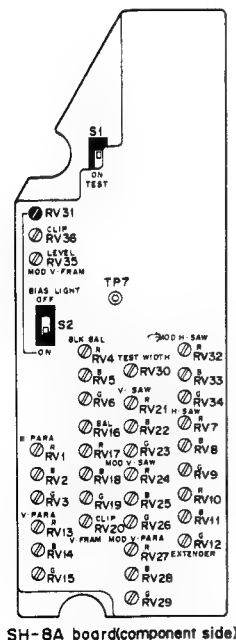


Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP3/PA-37 board is 0.4 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the RV7 **HF**/PA-37 board so that the amplitude level at 5 MHz is 0.16 Vp-p.



$A = 0.4$  Vp-p (100%)  
 $B = 0.16$  Vp-p (40%)

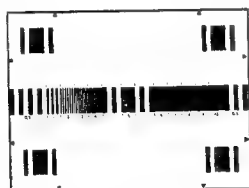




#### 4-3-3. RED PA Frequency Response at high Frequencies Adjustment

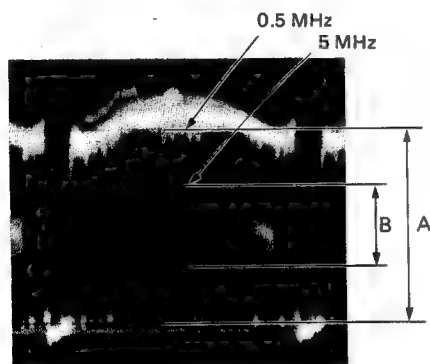
Object : Multiburst chart  
 Measuring equipment : Oscilloscope  
 Preparation : Remove the shielding case on the PA-37 board.  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP1/PA-37 board is 0.2 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the RV1 [HF]/PA-37 board so that the amplitude level at 5 MHz is 0.06 Vp-p.



A = 0.2 Vp-p (100%)  
 B = 0.06 Vp-p (30%)

#### 4-3-4. BLUE PA Frequency Response at high Frequencies Adjustment

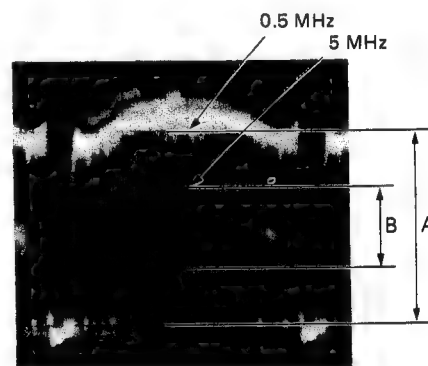
Object : Multiburst chart  
 Measuring equipment : Oscilloscope  
 Preparation : Remove the shielding case on the PA-37 board.  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to the 0.5 MHz at TP2/PA-37 board is 0.2 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Repeat Step 2.
5. Adjust the RV4 [HF]/PA-37 board so that the amplitude level at 5 MHz is 0.08 Vp-p.



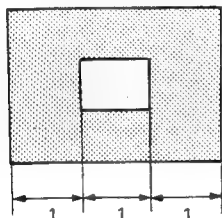
A = 0.2 Vp-p (100%)  
 B = 0.08 Vp-p (40%)

#### 4-3-5. GREEN PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart  
 Equipment : Oscilloscope  
 Preparations : S8 REC/ENC → REG  
                   S7 G/-G → G  
                   S6 R/B → OFF } /PR-75 board

1. Shoot the white window chart as shown below.

Monitor (Underscanning)



2. Adjust the iris control so that the video level at the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point: 

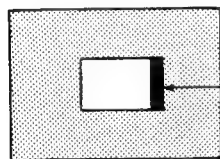
- CV3 (LF1)
  - CV6 (LF2)
  - CV11 (LF3)
  - CV12 (LF4)
  - RV12 (LF5)
  - RV8 (MF)

}

/PA-37 board

Adjust: White or black streaking goes not appear on the monitor.

Monitor

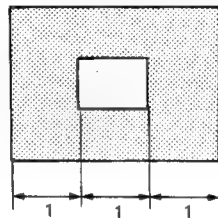


#### 4-3-6. RED PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart  
 Equipment : Oscilloscope  
 Preparations : S8 REC/ENC → REG  
                   S7 G/-G → OFF  
                   S6 R/B → R } /PR-75 board

1. Shoot the white window chart as shown below.

Monitor (Underscanning)



2. Adjust the iris control so that the video level at the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point: 

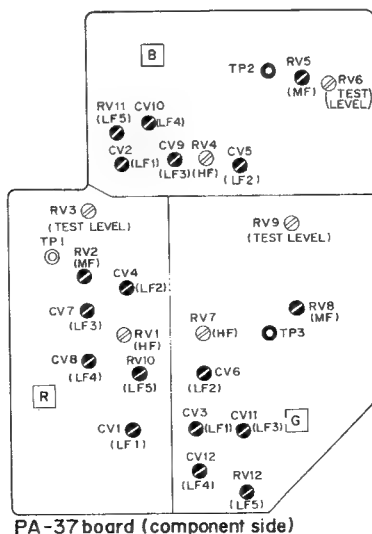
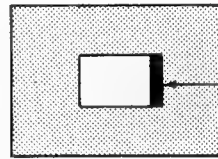
- CV1 (LF1)
  - CV4 (LF2)
  - CV7 (LF3)
  - CV8 (LF4)
  - RV10 (LF5)
  - RV2 (MF)

}

/PA-37 board

Adjust: White or black streaking goes not appear on the monitor.

Monitor



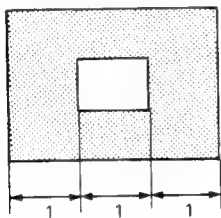
PA-37 board (component side)

#### 4-3-7. BLUE PA Frequency Response at Low and Medium Frequencies Adjustment

Object : White window chart  
 Equipment : Oscilloscope  
 Preparation : S8 **REG/ENC** → REG  
 S7 **G/-G** → OFF  
 S6 **R/B** → B } PR-75 board

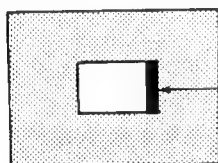
1. Shoot the white window chart as shown below.

Monitor (Underscanning)



2. Adjust the iris control so that the video level the TP3/PA-37 board is 0.4 Vp-p.
3. Adj. point:
  - CV2 (LF1)
  - CV5 (LF2)
  - CV9 (LF3)
  - CV10 (LF4)
  - RV11 (LF5)
  - RV5 (MF)
 } /PA-37 board

Adjust: White and black streaking goes not appear on the monitor.



Monitor

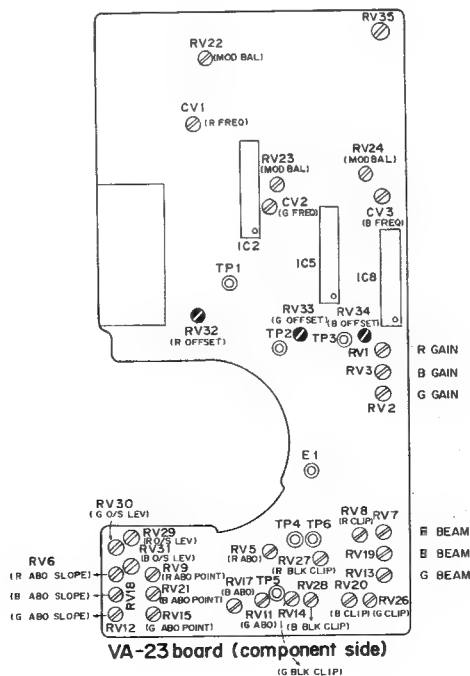
BVP-30(UC) : Serial No. 20171 and higher  
 BVP-30AP(EK): Serial NO. 30091 and higher

#### \*DC-OFF SET Adjustment\*

Lens : Close  
 Equipment : Oscilloscope (DC mode)  
 To be extended : VA-23 Board  
 Trigger : TP4 (H. TRIG)/SG-63A Board

1. Adjust the ● RV33 **G OFF SET** /VA-23 board so that the DC level of IC5 pin 1/VA-23 board does not change when select the GAIN SW to 0 dB and 18 dB.
2. Adjust the ● RV32 **R OFF SET** /VA-23 board so that the DC level of IC2 pin 1/VA-23 board does not change when select the GAIN SW to 0 dB and 18 dB.
3. Adjust the ● RV34 **B OFF SET** /VA-23 board so that the DC level of IC8 pin 1/VA-23 board does not change when select the GAIN SW to 0 dB and 18 dB.

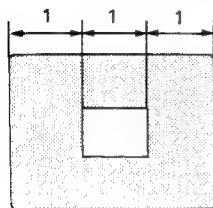
Note: After this adjustment is completed, rest the GAIN Switch to 0 dB.



#### 4-3-8. VA Gain Adjustment

- Note:**
1. Repeatedly adjust the 4-3-8. VA gain adjustment at the 4-3-11. Dynamic range adjustment to obtained the specification.
  2. For the VA gain adjustment, the reflection type chart is highly recommended, and make sure that the white area has 3200°K of color temperature. if the pattern box is used for this adjustment, well maintained pattern box should be used.

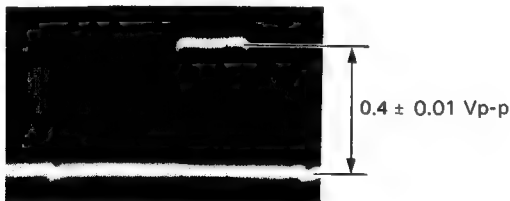
Object : White window chart (3200°K)



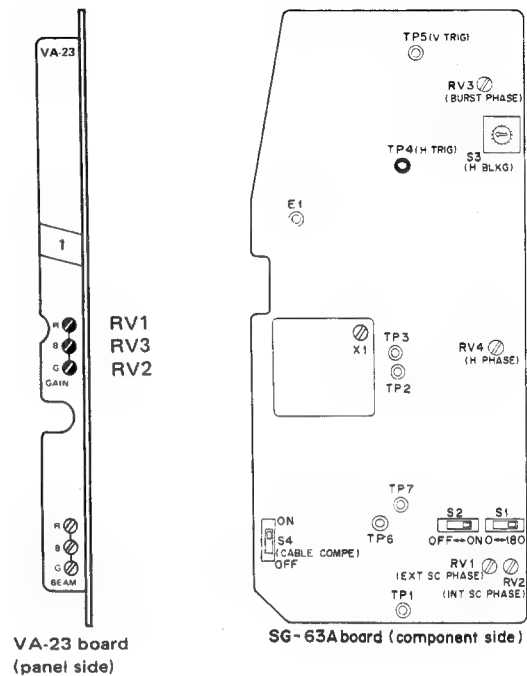
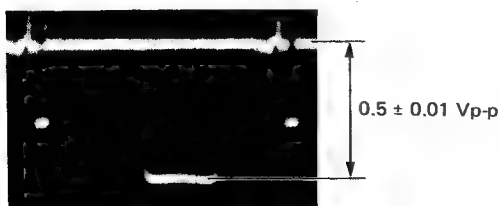
Monitor

Measuring equipment : Oscilloscope  
 To be extended : VA-23 board  
 Preparation : Remove the shielding case on the PA-37 board  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the iris control so that the video level at TP3/PA-37 board is  $0.4 \pm 0.01$  Vp-p.



2. RV35/VA-23 board → mechanical center.
3. Adjust the RV2 [G. GAIN]/VA-23 board so that the video level at B5/extension board is  $0.5 \pm 0.01$  Vp-p.
4. Adjust the RV1 [R. GAIN]/VA-23 board so that the video level at B3/extension board is  $0.5 \pm 0.01$  Vp-p.
5. Adjust the RV3 [B. GAIN]/VA-23 board so that the video level at B4/extension board is  $0.5 \pm 0.01$  Vp-p.



#### 4-3-9. AGC Pulse Level Adjustment

1. Adjustment the RV-36 BF GAIN VA-23 board so that the BF level at B5/extension board is  $0.5 \pm 0.01$  Vp-p.



#### 4-3-10. Test Signal Waveform Adjustment

**Note:** Be sure to carry out 4-3-8. VA Gain Adjustment before this adjustment.

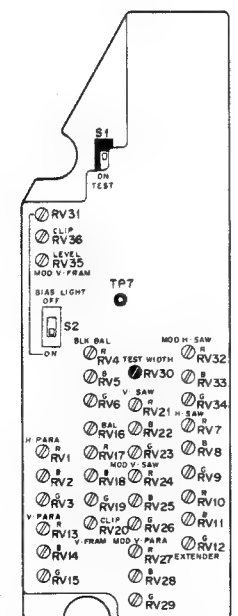
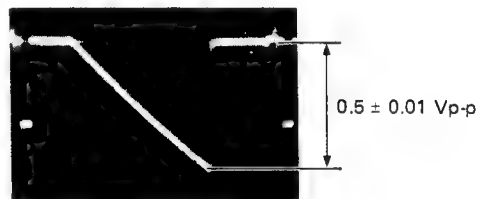
##### 1) Test saw width adjustment

Measuring equipment : Oscilloscope  
 Preparation : S1 **TEST**/SH-8A board → ON  
 To be measured : TP7/SH-8A board  
 To be adjusted : RV30/SH-8A board  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 Specification :  $A = 1.5 \pm 0.1$  Vp-p

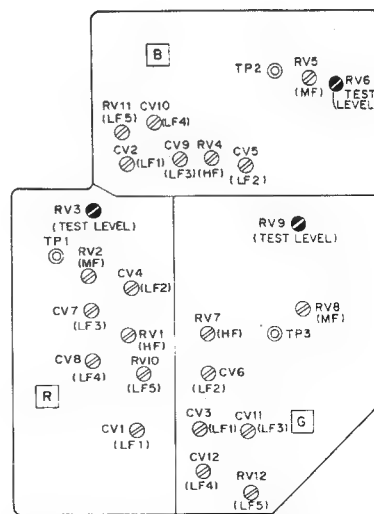


##### 2) Test saw level adjustment

Measuring equipment : Oscilloscope  
 To be extended : VA-23 board  
 Preparation : S1 **TEST**/SH-8A board → ON  
 To be measured : A5 (G)  
                           A3 (R) } /extension board  
                           A4 (B)  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV9 (G)  
                           RV3 (R) } /PA-37 board  
                           RV6 (B)  
 Specification :  $0.5 \pm 0.01$  Vp-p



SH-8A board (component side)



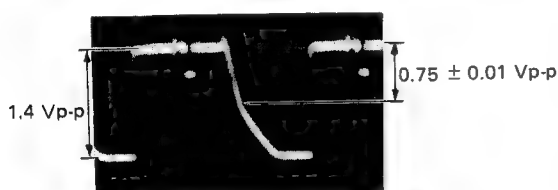
PA-37 board (component side)

#### 4-3-11. Dynamic Range Adjustment

**Note:** Be sure to carry out 4-3-10. TEST Signal waveform Adjustment before this adjustment.

Measuring equipment : Oscilloscope  
To be extended : VA-23 board  
Preparations : S1 **TEST**/SH-8A board → ON  
Trigger : TP4 (H. TRIG)/SG-63A board

1. GAIN SWITCH → 18 dB
2. Adjust the RV-35/VA-23 board so that the knee point at test signal waveform is  $0.75 \pm 0.01$  Vp-p. Be sure that the peak level on the test waveform signal is 1.4 Vp-p.



3. Be sure that the peak level of the test signal waveform at the B3/extension board is 1.4 Vp-p.
4. Be sure that the peak level of the test signal waveform at the B4/extension board is 1.4 Vp-p.

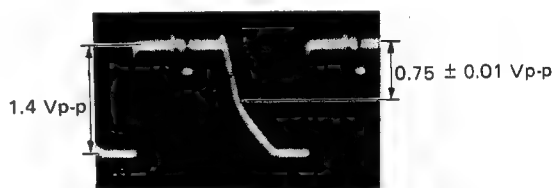
**Note:** This adjustment, 4-3-8. VA Gain adjustment and 4-3-9. TEST Signal Waveform Adjustment affect each other, so repeat adjustments until their specifications are satisfied.

#### 4-3-12. IE. Clip Level Adjustment

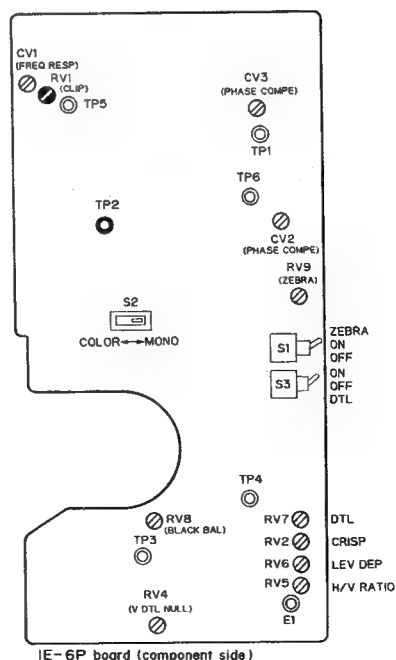
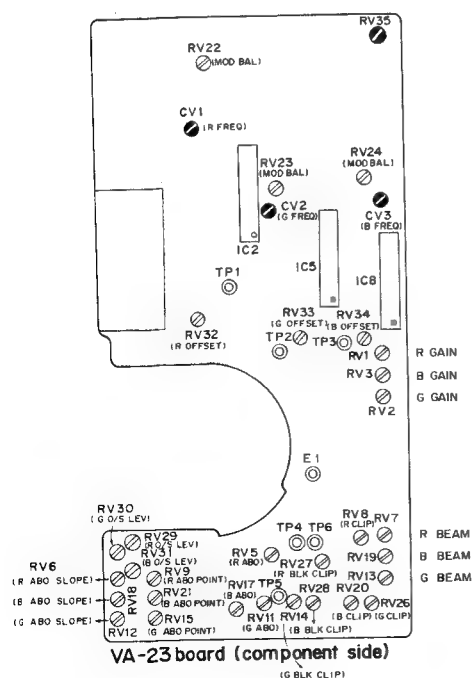
**Note:** Be sure to carry out 4-3-11. Dynamic Range Adjustment before this adjustment.

Measuring equipment : Oscilloscope  
To be extended : IE-6P board  
Preparations : S1 **TEST**/SH-8A board → ON  
Trigger : TP4 (H. TRIG)/SG-63A board

1. GAIN SWITCH → 18 dB
2. Adjust the RV1/IE-6P board so that the peak level on test signal waveform at TP2/IE-6P is  $1.4 \pm 0.01$  Vp-p.



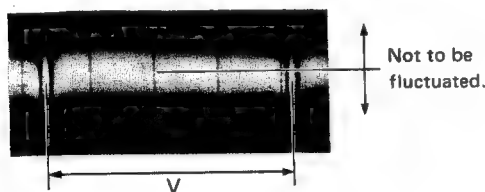
**Note:** After this adjustments is completed, set GAIN switch at 0 dB and S1 **TEST**/SH-8A board at OFF.



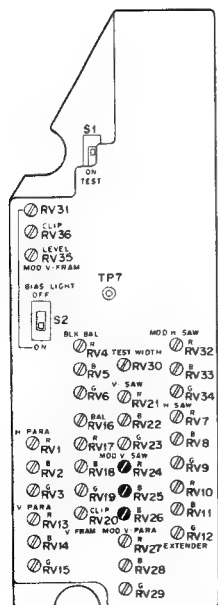
### 4-3-13. Modulator Balance Adjustment

Lens : Close  
 Measuring equipment : Oscilloscope  
 To be extended : VA-23 board  
 Trigger : TP5 (V. TRIG)/SG-63A board

1. Adjust the RV23/VA-23 board so that the video level at B5/extension board might not change when the RV26 [G.MOD V.SAW]/SH-8A board is turned clockwise or counterclockwise.
2. Adjust the RV22/VA-23 board so that the video level at B3/extension board might not change when the RV24 [R.MOD V.SAW]/SH-8A board is turned clockwise or counterclockwise.
3. Adjust the RV24/VA-23 board so that the video level at B4/extension board might not change when the RV25 [B.MOD V.SAW]/SH-8A board is turned clockwise or counterclockwise.



**Note:** After this adjustment is completed, be sure to carry out 4-3-22. White Shading Adjustment.



SH-8A board(component side)

### 4-3-14. VA Frequency Response Adjustment

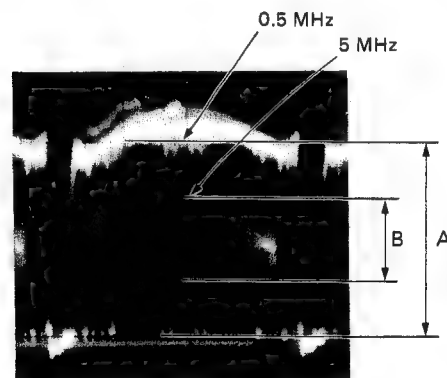
Object : Multiburst chart  
 Measuring equipment : Oscilloscope  
 To be extended : VA-23 board  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.



Monitor (Underscanning)

2. Adjust the iris control so that the video level corresponding to 0.5 MHz at B9/extension board is 0.4 Vp-p.
3. Maximize the waveform signal amplitude at 5 MHz by focusing of the lens.
4. Adjust the CV2/VA-23 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B5 (output)/extension board is the same as that at B9 (input)/extension board.
5. Adjust the CV1/VA-23 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B3 (output)/extension board is the same as that at B7 (input)/extension board.
6. Adjust the CV3/VA-23 board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at B4 (output)/extension board is the same as that at A11 (input)/extension board.









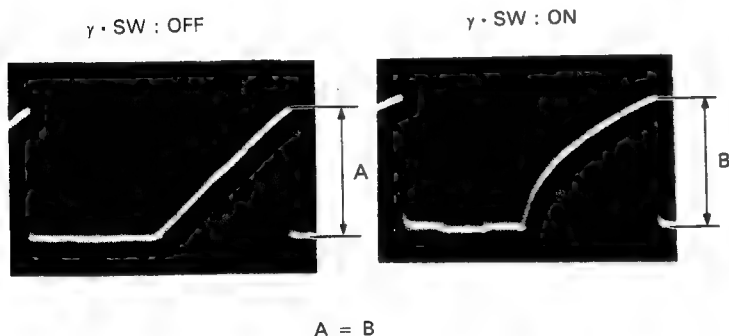
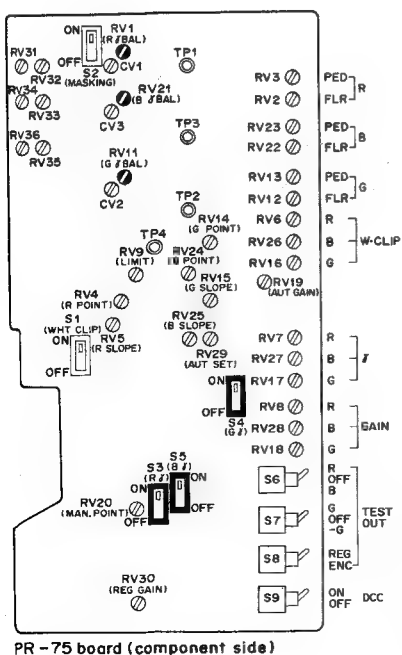
$$\left(\frac{B}{A}\right)_{\text{output}} = \left(\frac{B}{A}\right)_{\text{input}}$$

#### 4-3-15. Gamma Balance Adjustment

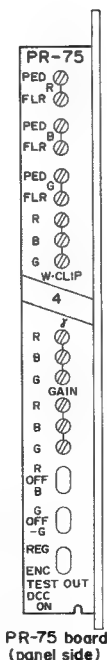
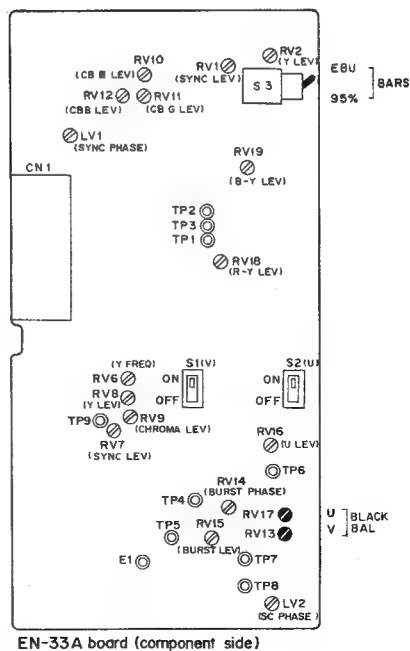
**Note:** Be sure to carry out 4-3-10, TEST Signal Waveform Adjustment before this adjustment.

Measuring equipment : Oscilloscope  
To be extended : PR-75 board  
Preparations : S1 TEST/SH-8A board → ON  
                  S1 WHT CLIP/PR-75 board → OFF  
Trigger : TP4 (H. TRIG)/SG-63A board

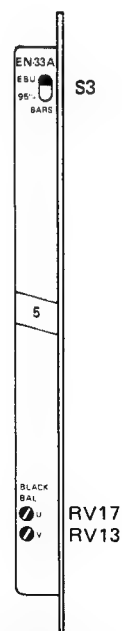
1. Adjust the  RV11/PR-75 board so that the white peak level of the test signal waveform at B9/extension board does not change while setting S4 /PR-75 board at ON or OFF.
2. Adjust the  RV1/PR-75 board so that the white peak level of the test signal waveform at B8/extension board does not change while setting S3 /PR-75 board at ON or OFF.
3. Adjust the  RV21/PR-75 board so that the white peak level of the test signal waveform at B11/extension board does not change while setting S5 /PR-75 board at ON or OFF.


$$A = B$$


PR - 75 board (component side)

PR-75 board  
(panel side)

EN-33A board (component side)



EN-33A board  
(panel side)



- #### 4-3-16. Carrier Balance Adjustment

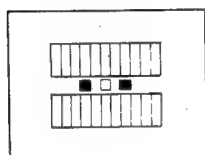
Measuring equipment : Vectorscope (MAX GAIN)  
To be extended : EN-33A board  
Preparation : OUTPUT switch → BARS  
S3 BARS/EN-33A board → EBU

1. Center the black beam spot on the vectorscope using both  RV13  and  RV17 /EN-33A board.

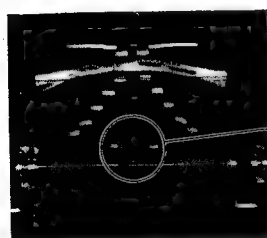


### 4-3-17. Flare Adjustment

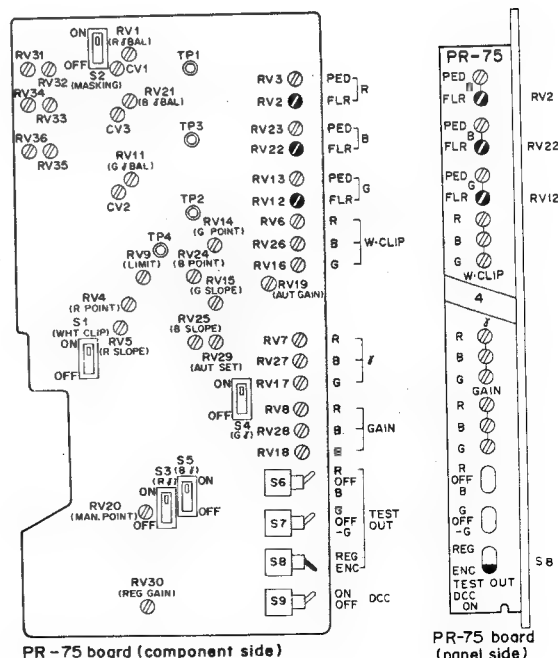
Object : Grayscale chart  
 Measuring equipment : Waveform monitor  
 To be extended : PR-75 board  
 Preparations : S8 **REG/ENC** → ENC  
                   RV22 **B.FLR** } /PR-75  
                   → Fully counterclockwise } board  
                   OUTPUT switch → CAM  
                   S1 **TEST**/SH-8A board → OFF As  
                   shown below, stick non-reflex and non-  
                   photoconductive cloth (e.g. velvet etc.)  
                   on the grayscale chart as a reference of  
                   the black level.



1. Adjust the zoom control so that the grayscale chart frame touches the undescanned picture frame on the monitor.
2. Open the iris control by 1 position from the position which the video level at the TEST OUT terminal is st at 700 mV.
3. Adjust the RV2 **R.FLR** and RV12 **G.FLR**/PR-75 board so that the waveform amplitude of the black level is minimized.



Make the amplitude level minimum.

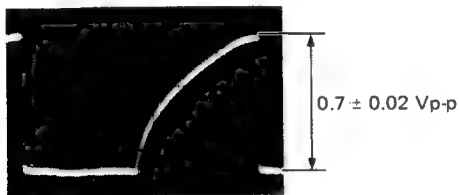


#### 4-3-18. PR Gain Adjustment

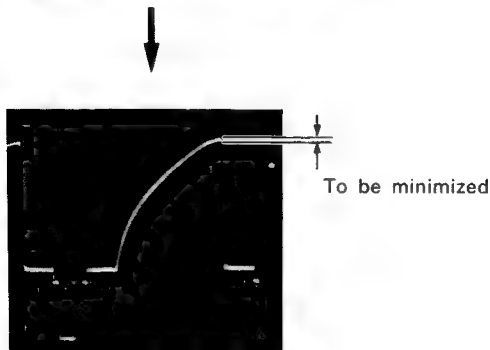
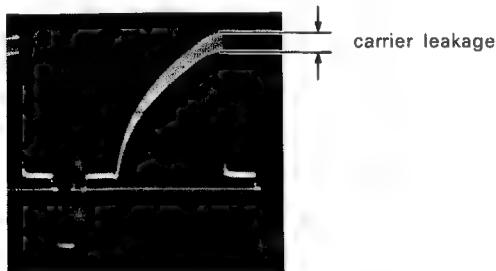
**Note:** Be sure to carry out 4-3-15. Gamma Balance Adjustment before this adjustment.

Measuring equipment : Oscilloscope, Waveform monitor  
 To be extended : PR-75 board  
 Preparations : S1 **WHT CLIP** → OFF  
                   S3 **R<sub>y</sub>** → ON  
                   S4 **G<sub>y</sub>** → ON  
                   S5 **B<sub>y</sub>** → ON  
                   S1 **TEST**/SH-8A board → ON  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the  $\text{RV18}$  **G. GAIN**/PR-75 board so that the video level at B9/extension board is  $0.7 \pm 0.02$  Vp-p.



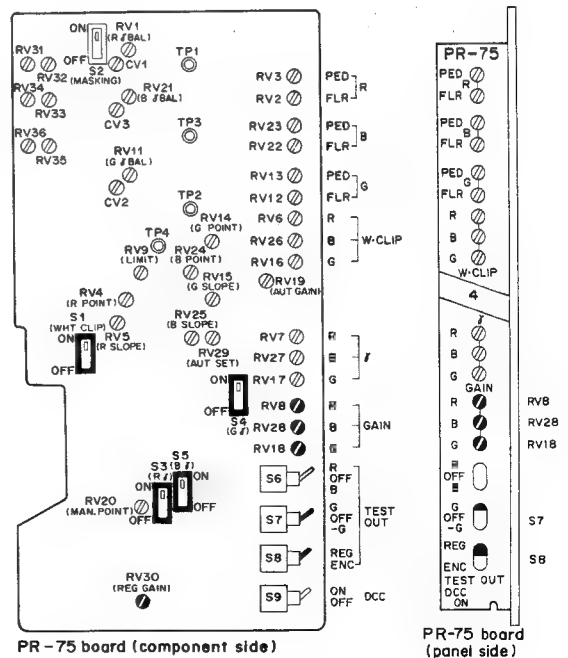
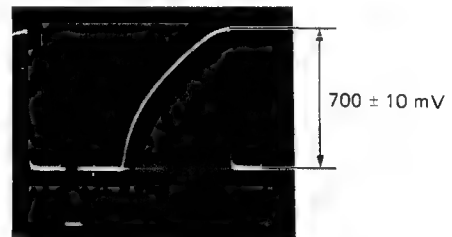
2. S8 **REG/ENC**/PR-75 board → ENC
3. Adjust the  $\text{RV8}$  **R. GAIN** and  $\text{RV28}$  **B. GAIN**/PR-75 board so that the carrier leakage at the peak of the test signal waveform at the TEST OUT terminal is minimized.



#### 4-3-19. Registration Video Gain Adjustment

**Note:** Be sure to carry out 4-3-18. PR Gain Adjustment before this adjustment.

Measuring equipment : Waveform monitor  
 To be extended : PR-75 board  
 Preparations : S1 **WHT CLIP** → OFF  
                   S8 **REG/ENC** → REG  
                   S7 **G/-G** → G  
                   S6 **R/G** → OFF  
 To be measured : TEST OUT terminal  
 To be adjusted :  $\text{RV30}$ /PR-75 board  
 Specification :  $700 \pm 10$  mV



#### 4-3-20. EN Y Level Adjustment

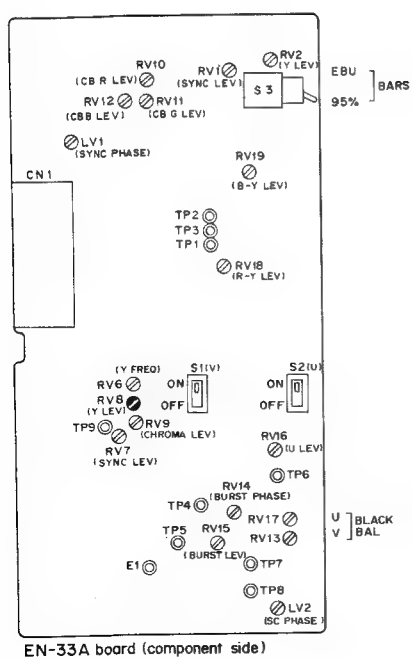
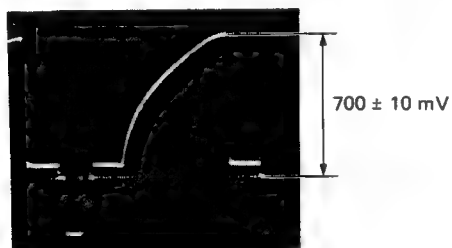
**Note:** Be sure to carry out 4-3-18. PR Gain Adjustment before this adjustment.

Measuring equipment : Waveform monitor

To be extended : EN-33A board

Preparation : S1 **TEST**/SH-8A board → ON  
 S1 **WHT CLIP** → OFF } /PR-75  
 S8 **REG/ENC** → ENC } board

Adjust the RV8/EN-33A board so that the peak level of the test signal waveform at the TEST OUT terminal is  $700 \pm 10$  mV.



EN-33A board (component side)



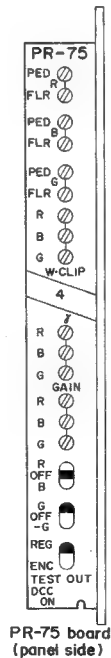
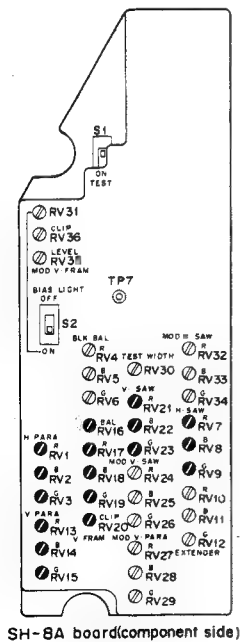
EN-33A board (panel side)

4-3-21. BLACK Shading Adjustment

- Lens : Close  
Measuring equipment : Waveform monitor  
Preparations : GAIN switch → 18 dB  
S8 REG/ENC/PR-75 board → REG  
S1 TEST/SH-8A board → OFF  
Adjustment : Adjust the RVs so that all waveforms are flat. The following table shows the corresponding RVs and the symptoms of shading.

	Switch setting on the PR-75 board	Adjusting point on the SH-8A board						
		H·SAW	V·SAW	H·PARA	V·PARA	V·FRAM	V·FRAM BAL	V·FRAM CLIP
G	S7 <span>G/-G</span> → G S6 <span>R/B</span> → OFF	● RV9	● RV23	● RV3	● RV15	● RV19	● RV16	● RV20
R	S7 <span>G/-G</span> → OFF S6 <span>R/B</span> → R	● RV7	● RV21	● RV1	● RV13	● RV17		
B	S7 <span>G/-G</span> → OFF S6 <span>R/B</span> → B	● RV8	● RV22	● RV2	● RV14	● RV18		
TEST OUT								

**Note:** After this adjustment is completed, reset the GAIN switch to 0 dB.

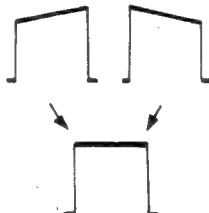
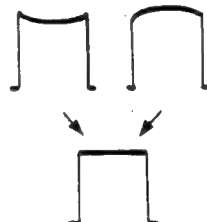
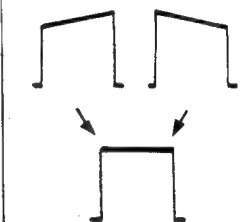
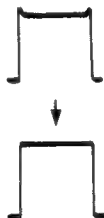


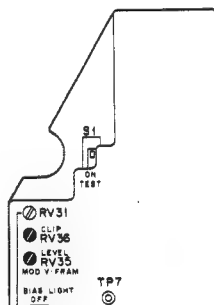
4-3-22. White Shading Adjustment

Object : White window chart  
Measuring equipment : Waveform monitor  
Preparations : S1 **WHT CLIP** → OFF  
S8 **REG/ENC** → REG } /PR-75 board

- 1. Adjust the zoom control so that the white window frame touches the underscanned picture frame on the monitor.
- 2. Adjust the iris control so that the video level at the TEST OUT terminal is 700 mV.
- 3. Adjust RVs so that all waveforms are flat, following table is shown the corresponding RVs and the symptoms of shading.

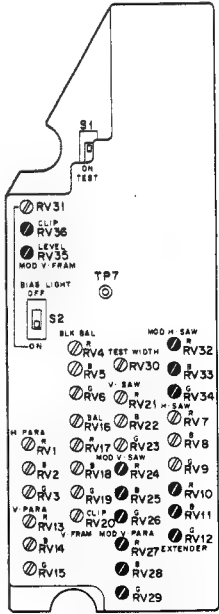
Notes: The EXT MOD SAW adjustment can be performed when the lens with an extender is used.  
Set the lens EXT lever at the X2 position and adjust the iris control so that the video level at the TEST OUT terminal is 700 mV, and then perform the EXT MOD SAW adjustment.  
After the adjustment is completed, reset the EXT lever at the X1 position.

	Switch setting on the PR-75 board	Adjusting point on the SH-8A board			
		MOD H·SAW	MOD V·SAW	MOD V·PARA	EXT MOD SAW (V)
G	S7 <span>G/-G</span> → G S6 <span>R/B</span> → OFF	RV34	RV26	RV29	RV12
R	S7 <span>G/-G</span> → OFF S6 <span>R/B</span> → R	RV32	RV24	RV27	RV10
B	S7 <span>G/-G</span> → OFF S6 <span>R/B</span> → B	RV33	RV25	RV28	RV11
TEST OUT					
		CLIP		MOD V·FRAME	
S8 <span>REG/ENC</span> → ENC		RV36	RV35		
TEST OUT					



RV31  
CLIP  
RV36  
LEVEL  
RV35  
MOD V·FRAME  
BIAS LIGHT  
OFF

TP7

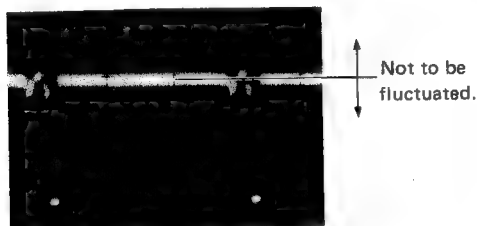


SH-8A board(component side)

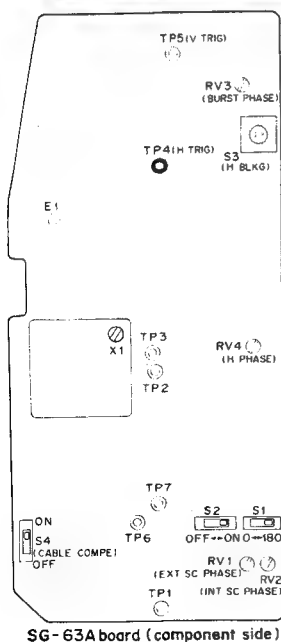
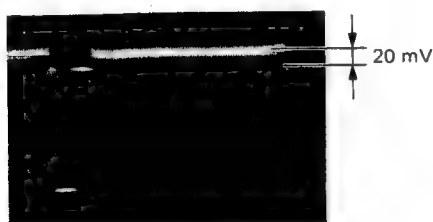
### 4-3-23. Black Balance and Pedestal Adjustment

Lens : Close  
 Measuring equipment : Waveform monitor,  
 Vectorscope (MAX GAIN)  
 To be extended : VA-23 board  
 Preparations : Reset the S4/AT-16 board at the  
 OP position after it is set at PRST.  
 S8 **REG/ENC** → REG  
 S7 **G/-G** → G  
 S6 **R/B** → OFF  
 Pedestal → mechanical center  
 Trigger : TP4 (H. TRIG)/SG-63A board

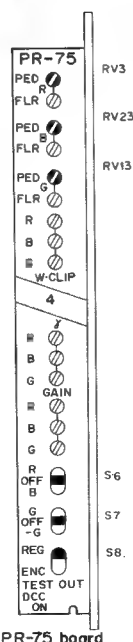
1. RV4 (R. BAL)/SH-8A board  
 RV5 (B. BAL) → Fully counterclockwise
2. When the GAIN switch is changed over from 0 dB to 9 dB and 18 dB, adjust the RV6/SH-8A board so that the black level at B5/Extension board does not change.



3. Adjust the RV13 **G. PED**/PR-75 board so that the pedestal level is 20 mV.

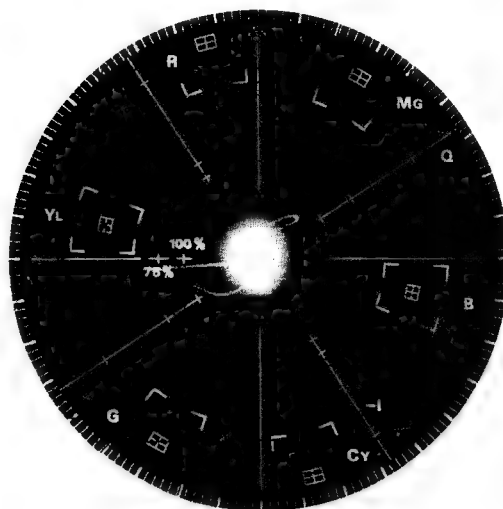


SG-63A board (component side)

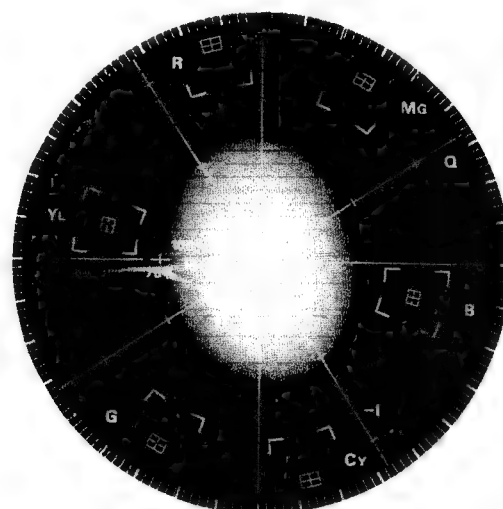


PR-75 board (panel side)

4. S8 **REG/ENC**/PR-75 board → ENC
5. Adjust the RV3 **R. PED** and RV23 **B. PED**/PR-75 board so that the beam spot is in the center of the vectorscope.



6. GAIN switch → 18 dB.
7. Finely adjust the RV1 and RV2/DUS-122 board RV4 and RV5/SH-8A board so that the beam spot is in the center of the vectorscope.



8. Repeat Step 1 through Step 7 until both specifications are satisfied.
9. GAIN switch → 0 dB

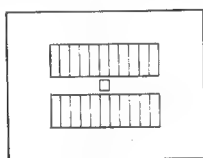
#### 4-3-24. Gamma Correction Adjustment

Object : Grayscale chart (11 step)  
 Measuring equipment : Waveform monitor  
 To be extended : PR-75 board

Preparations : S1 **WHT CLIP** → OFF  
 S8 **REG/ENC** → REG  
 S7 **G/-G** → G  
 S6 **R/B** → OFF  
 S3 **R<sub>y</sub>** → ON  
 S4 **G<sub>y</sub>** → ON  
 S5 **B<sub>y</sub>** → ON

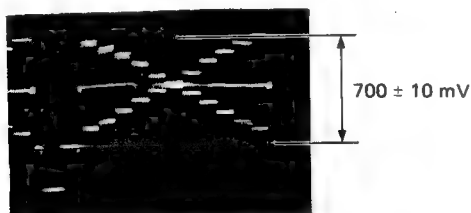
/PR-75 board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

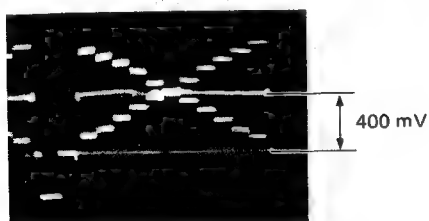


Monitor

2. Adjust the iris control so that the peak level at the TEST OUT terminal is  $700 \pm 10$  mV.

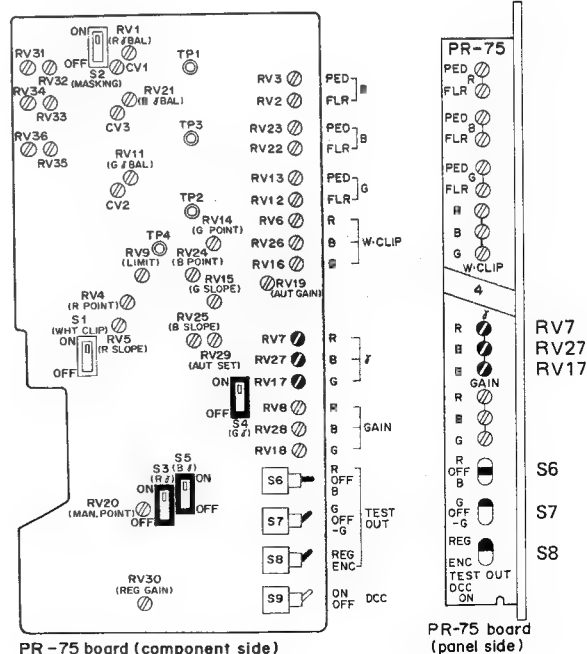
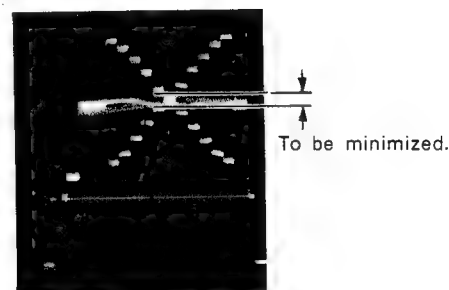
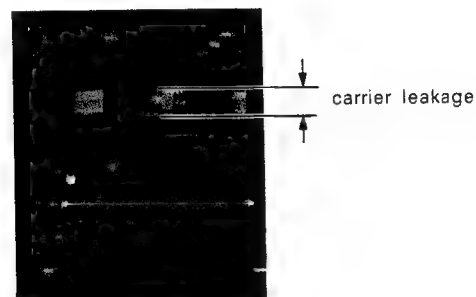


3. Adjust the RV17 **G<sub>y</sub>**/PR-75 board so that the cross point on the waveform signal at the TEST OUT terminal is 400 mV.



4. S8 **REG/ENC**/PR-75 board → ENC.

5. Adjust the RV7 **R<sub>y</sub>** and RV27 **B<sub>y</sub>**/PR-75 board so that the carrier leakage at the cross point on the waveform signal is minimized.



#### 4-3-25. Knee, White Clip Adjustment

Measuring equipment : Waveform monitor

To be extended : PR-75 board

Preparations : S1 **TEST**/SH-8A board → ON

S3 **Ry** → ON

S4 **Gy** → ON

S5 **By** → ON

S1 **WHT CLIP** → ON

S8 **REG/ENC** → REG

S7 **G/-G** → G

S6 **R/B** → OFF

S9 **DCC** → ON

RV16 **G W. CLIP** →

Fully counterclockwise

RV6 **R W. CLIP** →

Fully counterclockwise

RV26 **B W. CLIP** →

Fully counterclockwise

RV15 → Fully clockwise

RV5 → Fully clockwise

RV25 → Fully clockwise

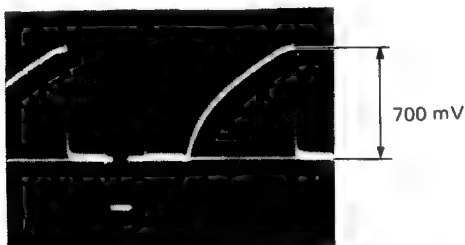
GAIN switch → 0 dB

/PR-75  
board

Trigger : TP4 (H. TRIG)/SG-63A board

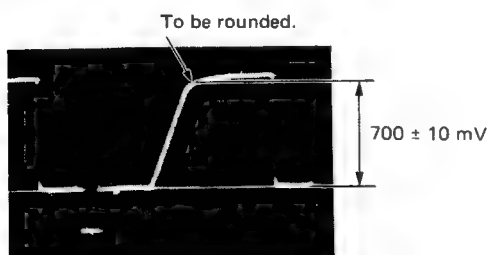
#### \* MANUAL KNEE WHITE CLIP ADJUSTMENT\*

1. Adjust the RV20 (MAN. POINT)/PR-75 board turning from fully counterclockwise to fully clockwise slowly so that the peak level at the waveform signal is a start point at 700 mV.



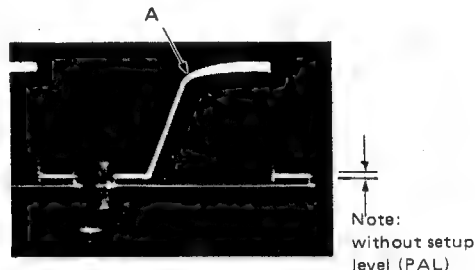
2. GAIN switch → 9 dB

3. Adjust the RV14/PR-75 board so that the knee point at test signal waveform is 700 mV.



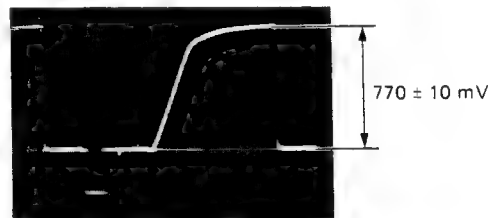
4. S8 **REG/ENC**/PR-75 board → ENC

5. Adjust both RV4 and RV24/PR-75 board so that the carrier leakage at the knee point (portion A) on the test waveform signal is minimized.



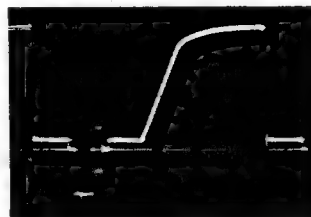
6. S8 **REG/ENC**/PR-75 board → REG

7. Adjust the RV15/PR-75 board so that the peak level at the waveform signal is  $770 \pm 10$  mV.



8. S8 **REG/ENC**/PR-75 board → ENC

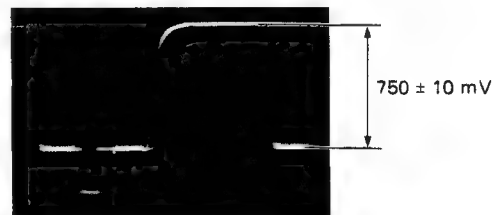
9. Adjust both RV5 and RV25/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



10. GAIN switch → 18 dB

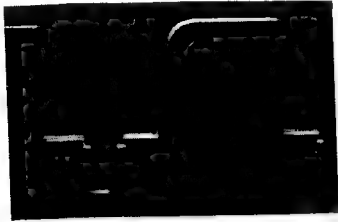
S8 **REG/ENC**/PR-75 board → REG

11. Adjust the RV16 **G W. CLIP**/PR-75 board so that the video level at the TEST OUT terminal is  $750 \pm 10$  mV.





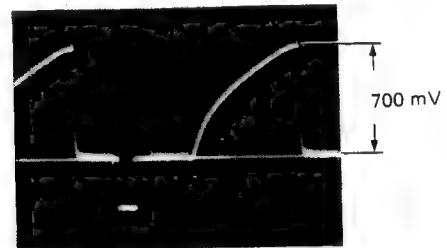
12. S8 **REG/ENC**/PR-75 board → ENC.
13. Adjust both **RV6** **R W. CLIP** and **RV26** **B W. CLIP**/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



#### \*AUTO KNEE WHITE CLIP ADJUSTMENT\*

14. S8 **REG/ENC** → REG  
 S7 **G/-G** → G  
 S6 **R/B** → OFF  
 S9 **DCC** → ON  
**RV9 (LIMIT)** → Fully counterclockwise  
**RV29 (AUTO SET)** → mechanical center  
 GAIN switch → 0 dB
15. Adjust the **RV19 (AUTO GAIN)**/PR-75 board turning from fully clockwise to fully counterclockwise slowly so that the peak level at the waveform signal is a start point at 700 mV.

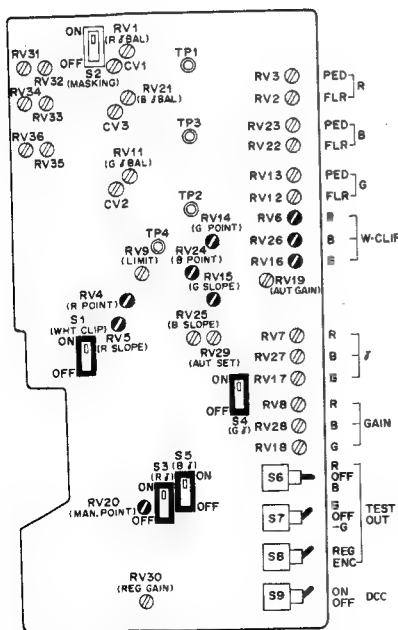
/PR-75 board



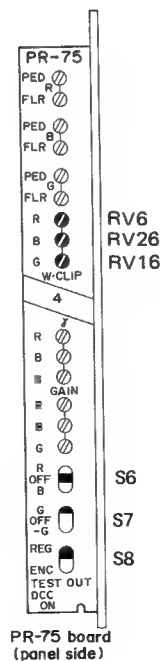
16. Adjust the **RV29 (AUTO SET)**/PR-75 board so that the peak level of test waveform signal at TP4/PR-75 board is  $0.15 \pm 0.01$  Vp-p.



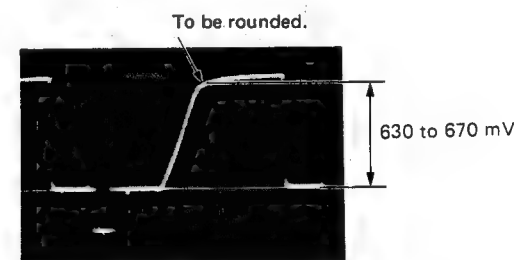
17. GAIN switch → 9 dB
18. Adjust the **RV14/PR-75** board so that the knee point at test signal waveform is 630 to 670 mV.



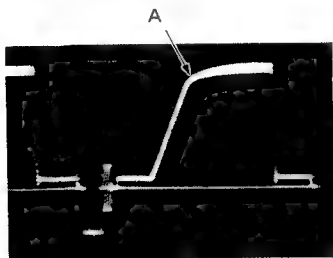
PR-75 board (component side)



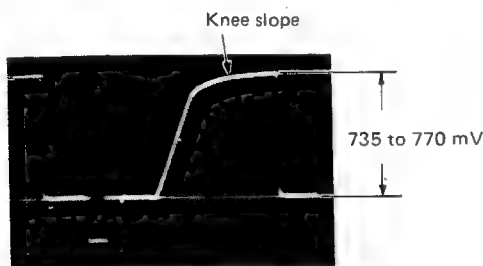
PR-75 board (panel side)



19. S8 **REG/ENC** /PR-75 board → ENC
20. Adjust both **RV4** and **RV24**/PR-75 board so that the carrier leakage at the knee point (portion A) on the test waveform signal is minimized.



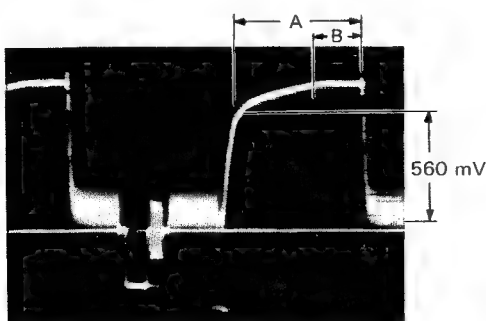
21. S8 **REG/ENC** /PR-75 board → REG
22. Adjust the **RV15**/PR-75 board so that the peak level at the waveform signal is 735 to 770 mV. Be sure that the knee slope (portion A) is a straight line as possible.



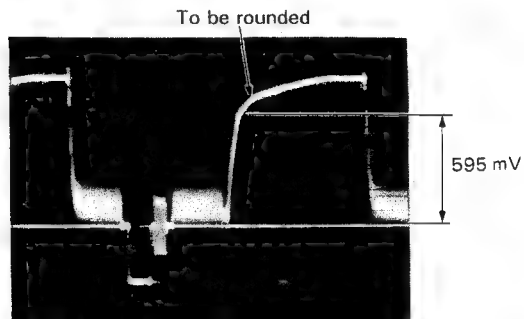
23. S8 **REG/ENC** /PR-75 board → ENC
24. Adjust both **RV5** and **RV25**/PR-75 board so that the carrier leakage at the TEST OUT waveform signal is minimized.



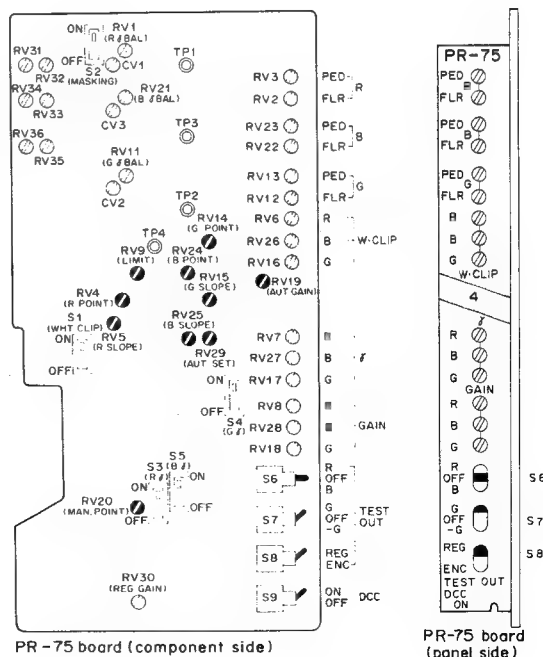
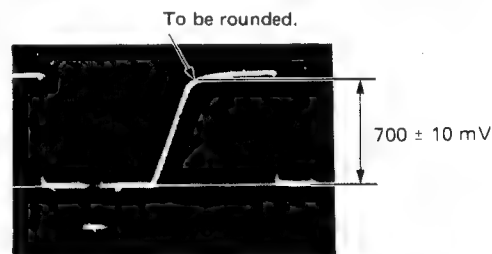
25. GAIN switch → 18 dB
26. Adjust Steps 17 to 23 repeatedly, so that the knee point on the test waveform signal is 560 mV and  $B/A \leq 1/3$ .



27. Adjust the **RV9** (LIMIT)/PR-75 board so that the knee point on the test waveform signal is 595 mV.



28. GAIN switch → 9 dB  
S8 **REG/ENC** /PR-75 board → REG  
S9 **DCC** /PR-75 board → OFF
29. Adjust the **RV20** (MAN. POINT)/PR-75 board so that the knee point on the test waveform signal is  $700 \pm 10$  mV.

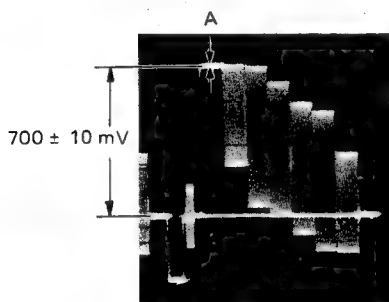


#### 4-3-26. Color Bar Adjustment

**Note:** Be sure to carry out 4-3-20. EN Y Level Adjustment before this adjustment.

Equipment : Waveform monitor  
 Preparations : OUTPUT switch → BARS  
 S3 BARS /EN-33A board → EBU  
 S8 REG/ENC /PR-75 board → ENC  
 To be measured : TEST OUT terminal

1. Adjust the RV10, RV11 and RV12/EN-33A board so that the portion A at the color-bar waveform signal is  $700 \pm 10$  mV and the carrier leakage is minimized.

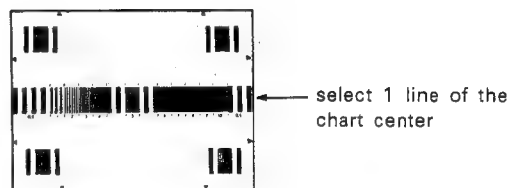


#### 4-3-27. EN Frequency Response Adjustment

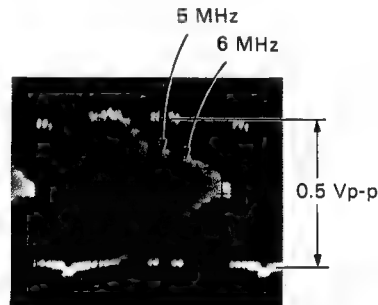
Object : Multiburst chart  
 Equipment : Oscilloscope, Waveform monitor  
 Preparations : S1 V → OFF } /EN-33A board  
 S2 U → OFF }  
 S8 REG/ENC /PR-75 board → ENC  
 Trigger : TP5 (V. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

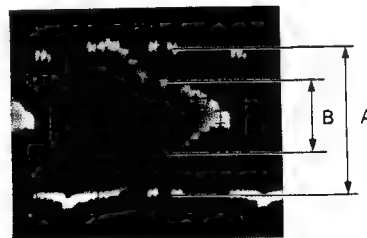
Monitor (Underscanning)



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at the A9/EN-33A board is 0.5 Vp-p. And adjust the focus control so that the waveform signal amplitude at both 5 MHz and 6 MHz are maximized.

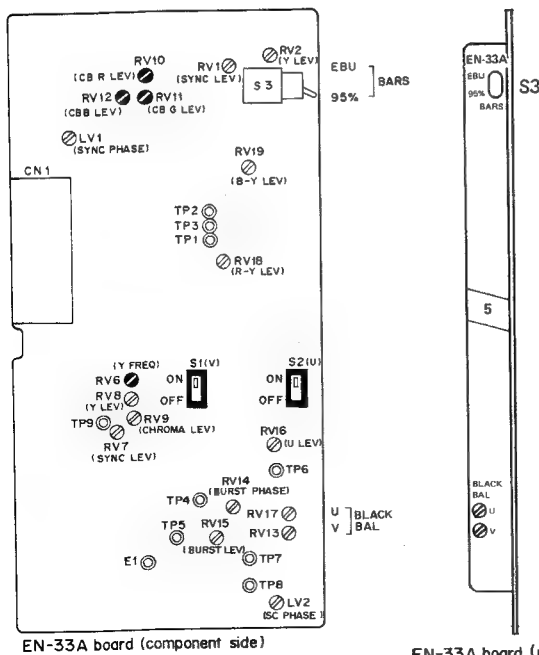


3. Adjust the RV6/EN-33A board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at the TEST OUT terminal (OUTPUT) is same as that at A9 (INPUT)/extension board.



$$\frac{B}{A} = \frac{B}{A}$$

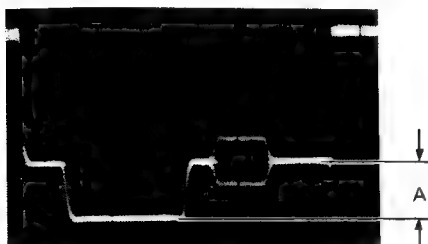
**Note:** After adjustment, set both S1 V and S2 U /EN-33A board at ON.



EN-33A board (panel side)

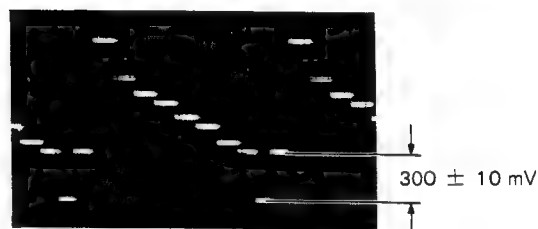
#### 4-3-28. EN SYNC Adjustment

Equipment : Waveform monitor  
 To be measured : TEST OUT terminal  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV7/EN-33A board  
 Specification :  $A = 300 \pm 10 \text{ mV}$



#### 4-3-30. VTR SYNC Adjustment

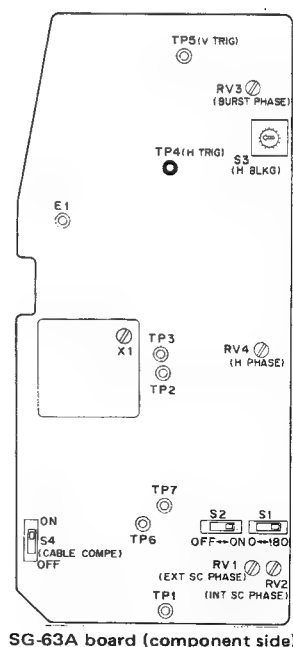
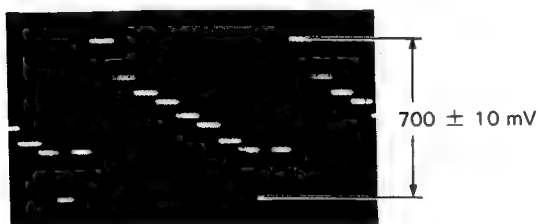
Equipment : Oscilloscope  
 To be measured : B13 (GND)/EN-33A board  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV1/EN-33A board  
 Specification :  $300 \text{ mV} \pm 10 \text{ mV}$



#### 4-3-29. VTR Y Adjustment

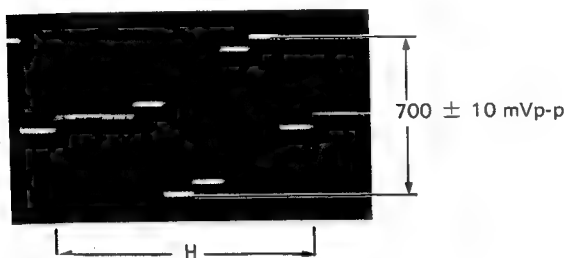
Equipment : Oscilloscope  
 Preparations : OUTPUT switch → BARS  
 S3 [BARS]/EN-33A board → EBU  
 To be measured : B13 (GND)/EN-33A board  
 Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the RV2/EN-33A board so that the waveform signal level is  $700 \pm 10 \text{ mV}$ .



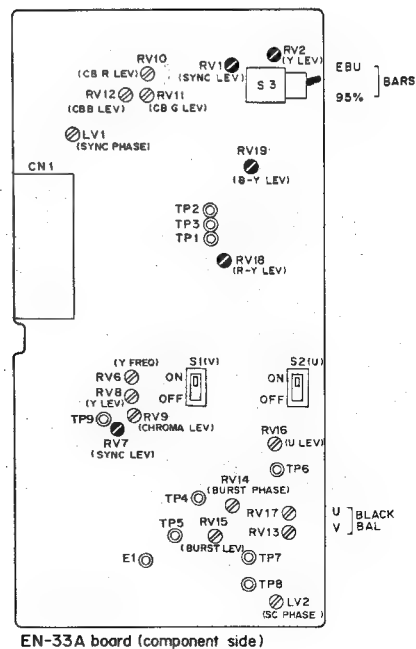
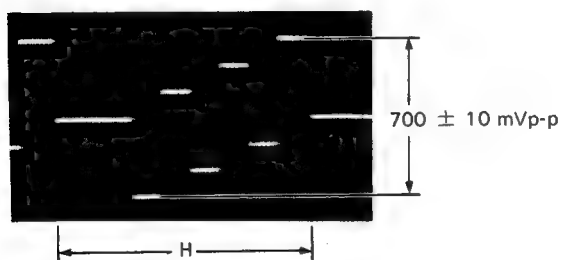
#### 4-3-31. VTR R-Y Gain Adjustment

Equipment : Oscilloscope  
 Preparation : OUTPUT switch → BARS  
 To be measured : A17 (GND)/EN-33A board  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV18/EN-33A board  
 Specification :  $700 \pm 10$  mVp-p



#### 4-3-32. VTR B-Y Gain Adjustment

Equipment : Oscilloscope  
 Preparation : OUTPUT switch → BARS  
 To be measured : A14 (GND)/EN-33A board  
 Trigger : TP4 (H. TRIG)/SG-63A board  
 To be adjusted : RV19/EN-33A board  
 Specification :  $700 \pm 10$  mVp-p



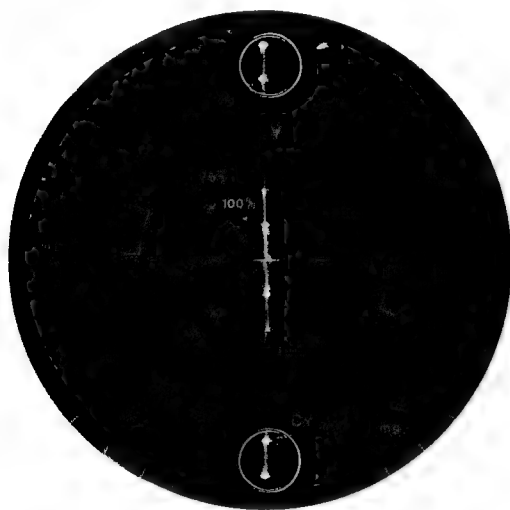
#### 4-3-33. V, U Gain Adjustment

**Equipment : Vectorscope**

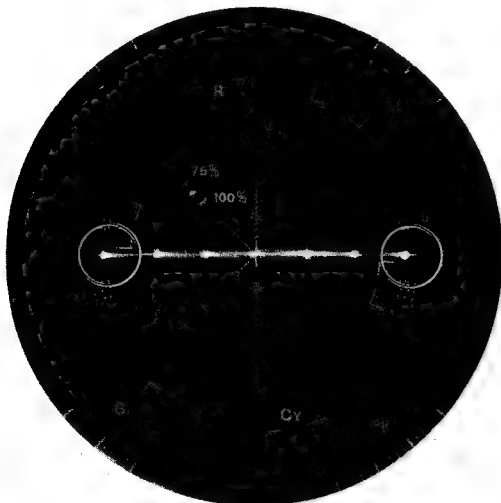
Preparation : OUTPUT switch  $\rightarrow$  BARS

To be measured : TEST OUT terminal

- S1 ☐ → ON  
 S2 ☐ → OFF  
 S8 ☐ /PR-75 board → ENC
- Adjust the PHASE control of the vectorscope so that the V signal is overlapped with V axis on the vectorscope.
- Adjust the ☐ RV9/EN-33A board so that the beam spots at both ends of the V signal are overlapped with the scale of the vectorscope.



4. S1 ☐  $\rightarrow$  OFF  
S2 ☐  $\rightarrow$  ON } /EN-33A board
5. Adjust the PHASE control of the vectorscope so that the U signal is overlapped with U axis on the vectorscope.
6. Adjust the  $\odot$  RV16/EN-33A board so that the beam spots at both ends of the U signal are overlapped with the scale of the vectorscope.






**Note:** After this adjustment is completed, set the S1 ☒ /EN-33A board at ON.

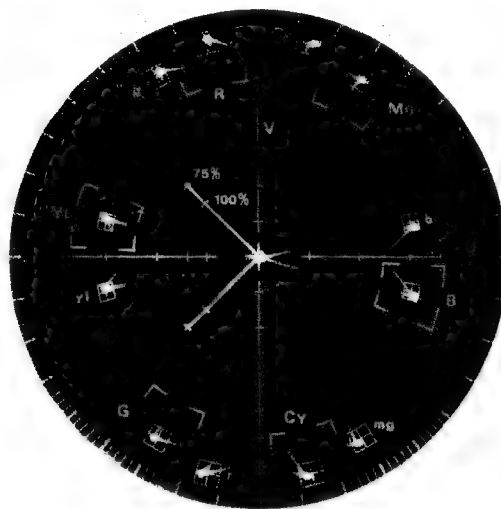
#### 4-3-34. Burst Adjustment


**Equipment : Vectorscope**

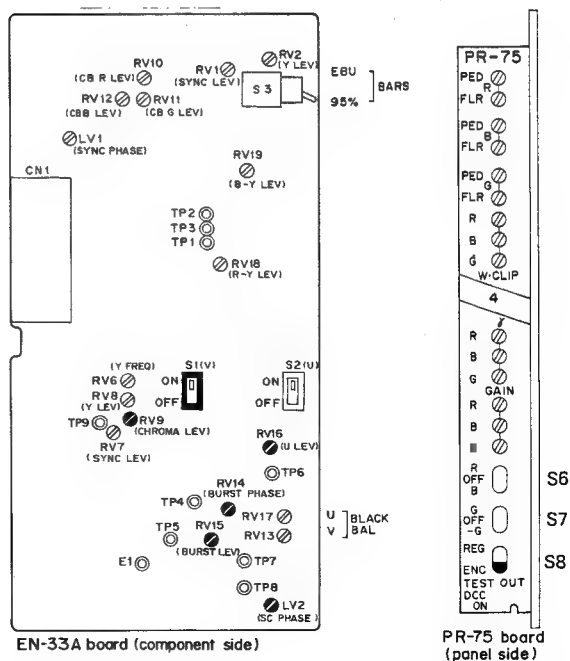
Preparation : OUTPUT switch  $\rightarrow$  BARS

S8 **REG/ENC** /PR-75 board → ENC

- 1 Adjust the ,  and  board so that the burst signals are overlapped with the 75% scale as shown below.



2. Check whether the each bright spot of the color bars is located in the scale () of vectorscope.  
If not, readjust 4-3-32. V.U Gain Adjustment.



## [IE-6P BOARD ADJUSTMENT]

To be extended : IE-6P board

Preparations : S3 ☐ DTL /IE-6P board → ON

S8 ☐ REG/ENC /PR-75 board → ENC

### 4-3-35. Clipping Point Adjustment

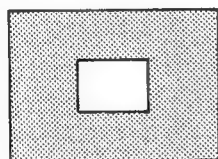
Object : White window chart

Equipment : Oscilloscope

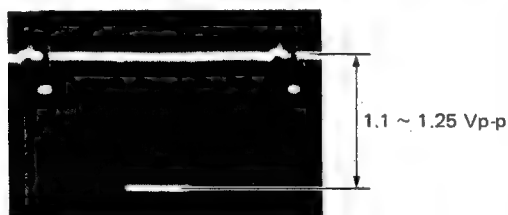
Trigger : TP4 (H. TRIG)/SG-63A board

1. Shoot the white window chart as shown below.

Monitor



2. Adjust the ☒ RV1/IE-6P board so that the waveform signal level at TP2/IE-6P board is clipped at 1.1 through 1.25V when the lens iris is set at OPEN.



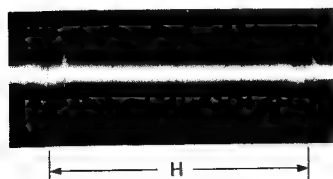
### 4-3-36. 1H and 2H Delay Signal Phase Adjustment

Object : White window chart

Equipment : Oscilloscope

Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the ☒ CV2 and ☒ CV3/IE-6P board so that the H. DTL signal does not appear at TP3/IE-6P board.



### 4-3-37. IE Frequency Response Adjustment

Object : Multiburst chart

Equipment : Oscilloscope

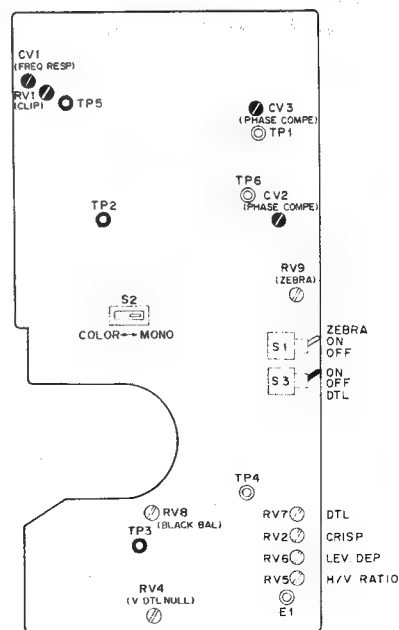
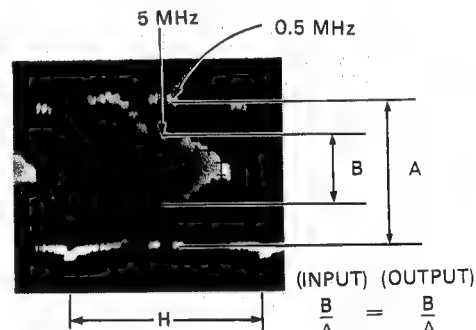
Trigger : TP5 (V. TRIG)/SG-63A board

1. Adjust the zoom control so that the Multiburst chart frame touches the underscanned picture frame on the monitor.

Monitor



2. Adjust the iris control so that the video level corresponding to 0.5 MHz at TP5/IE-6P board is 0.5V. And adjust the focus control so that the waveform amplitude at 5 MHz and 6 MHz is maximized.
3. Adjust the ☒ CV1/IE-6P board so that the ratio between the amplitude of 5 MHz and 0.5 MHz at TP2/IE-6P board is same as that at TP5/IE-6P board.

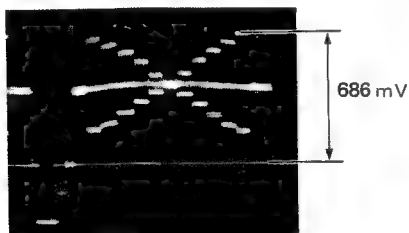


IE-6P board (component side)

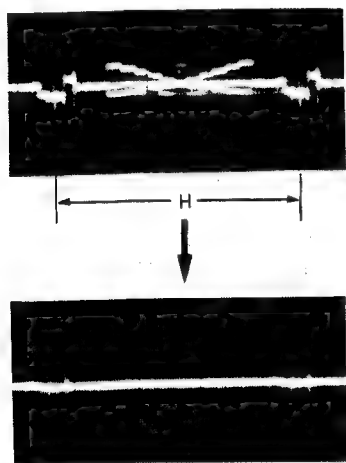
#### 4-3-38. V. DTL NULL Adjustment

Object : Grayscale chart  
Equipment : Waveform monitor, Oscilloscope  
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the iris control so that the video level at the TEST OUT terminal is 686 mV.



2. Adjust the  $\odot$  RV4/IE-6P board so that the waveform amplitude at TP3/IE-6P board is minimized.

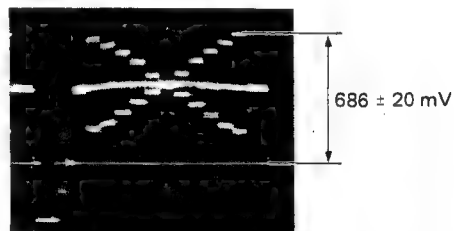


APPLICABLE SERIAL No.  
BVP-30AP(EK): UP TO 10160

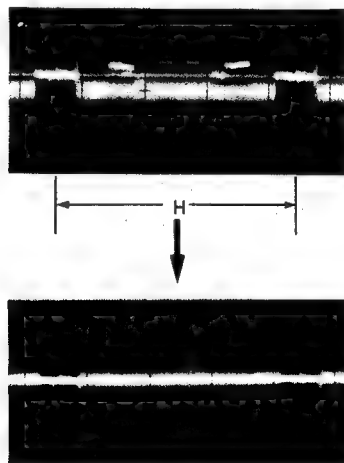
#### 4-3-39. Black Balance Adjustment

Object : Grayscale chart  
Equipment : Oscilloscope, Waveform monitor  
Preparations :  $\odot$  RV7  $\left\{ \begin{array}{l} \text{DTL} \rightarrow \text{Fully} \odot \\ \text{CRISP} \rightarrow \text{Fully} \odot \end{array} \right\}$  IE-6P board  
 $\odot$  RV6  $\left\{ \begin{array}{l} \text{LEV. DEP} \rightarrow \text{Fully} \odot \end{array} \right\}$   
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is  $686 \pm 20$  mV.



2. Adjust the  $\odot$  RV8/IE-6P board so that the waveform amplitude at TP4/IE-6P board is minimized.



**Note:** When this adjustment is done, continue to adjust till DTL Gain Adjustment (4-3-42).

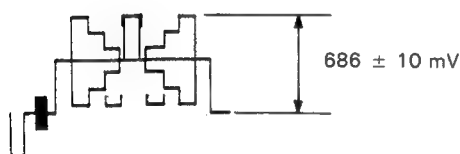


APPLICABLE SERIAL No.  
BVP-30AP(EK): 10161 AND HIGHER

#### 4-3-39. Black Balance Adjustment

Object : Grayscale chart  
Measuring equipment: Oscilloscope, Waveform monitor  
Preparations :  $\odot$  RV7 **DTL** → Fully clockwise  $\odot$  } /IE-6P board  
 $\odot$  RV2 **CRISP** → Fully counter clockwise  $\odot$  }  
Trigger : TP4 (H. TRIG)/SG-63A board

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is  $686 \text{ mV} \pm 10 \text{ mV}$ .



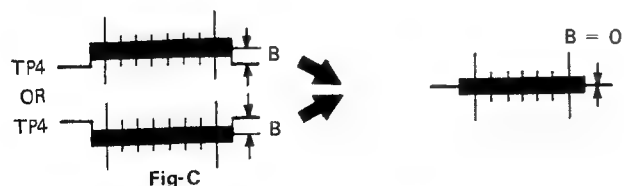
2. Turn  $\odot$  RV6/IE-6P board to fully counter clockwise  $\odot$ , then adjust the  $\odot$  RV6 to clockwise direction so that waveform at TP4/IE-6P board is like a following Fig-A.



3. Adjust  $\odot$  RV8/IE-6P board so that the level A of Fig-B waveform at TP4/IE-6P board is level zero.



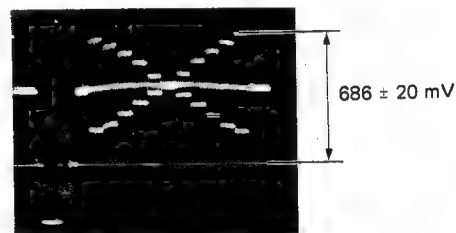
4. Turn  $\odot$  RV6/IE-6P board to fully counter, clockwise  $\odot$ .
5. Adjust  $\odot$  RV11/IE-6P board so that the level B of Fig-C at TP4/IE-6P board is level zero.



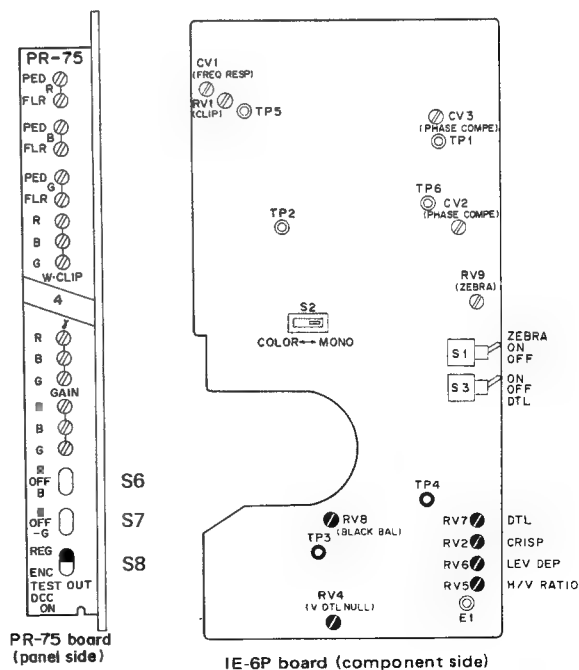
#### 4-3-40. Crispening Adjustment

Object : Grayscale chart  
Equipment : Waveform monitor  
Preparations :  $\odot$  RV6 **LEV. DEP** → Fully counterclockwise  $\odot$  } /IE-6P board  
 $\odot$  RV5 **H/V RATIO** → Fully counterclockwise  $\odot$  }  
S8 **REG/ENC** → REG } PR-75 board  
S7 **G/-G** → G }  
S6 **R/B** → OFF }

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is  $686 \pm 20 \text{ mV}$ .
2. Adjust the  $\odot$  RV2 **CRISP** /IE-6P board for such a position that noise of the output waveform on waveform monitor starts to be reduced.



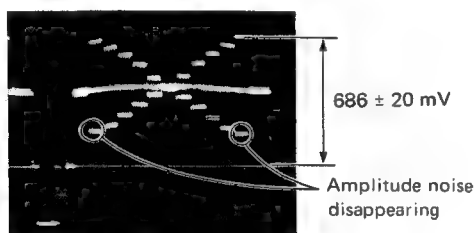
Note: After this adjustment is completed, be sure to carry out 4-3-40. Level Dependent Adjustment.



#### 4-3-41. Level Dependent Adjustment

Object : Grayscale chart  
 Equipment : Waveform monitor  
 Preparations : S8 **REG/ENC** → REG } PR-75 board  
 S7 **G/-G** → G  
 S6 **R/B** → OFF

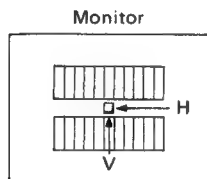
1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor, and adjust the iris control so that the video level at the TEST OUT terminal is  $686 \pm 20$  mV.
2. Adjust the  $\odot$  RV4 **LEV. DEP**/IE-6P board so that the DTL signal is not added to the lowermost step of grayscale waveform signal.



#### 4-3-42. H/V Ratio Adjustment

Object : Grayscale chart  
 Preparation :  $\odot$  RV7 **DTL**/IE-6P board  
 → Fully clockwise  $\curvearrowright$

1. Adjust the  $\odot$  RV5 **H/V RATIO**/IE-6P board so that the monitor H and V DTL amounts are the same.



**Note:** After this adjustment is completed, be sure to carry out 4-3-42 DTL Gain Adjustment.

#### 4-3-43. DTL Gain Adjustment

Object : Grayscale chart  
 To be adjusted :  $\odot$  RV7 **DTL**/IE-6P board

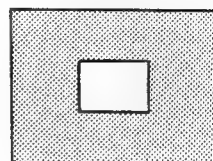
1. Set the  $\odot$  RV7 **DTL** according to the users' requirements while observing the monitor.

#### 4-3-44. VF Zebra Adjustment

Object : White window chart  
 Equipment : Waveform monitor  
 Preparations : S8 **REG/ENC**/PR-75 board → ENC  
 S1 **ZEBRA**/IE-6P board → ON

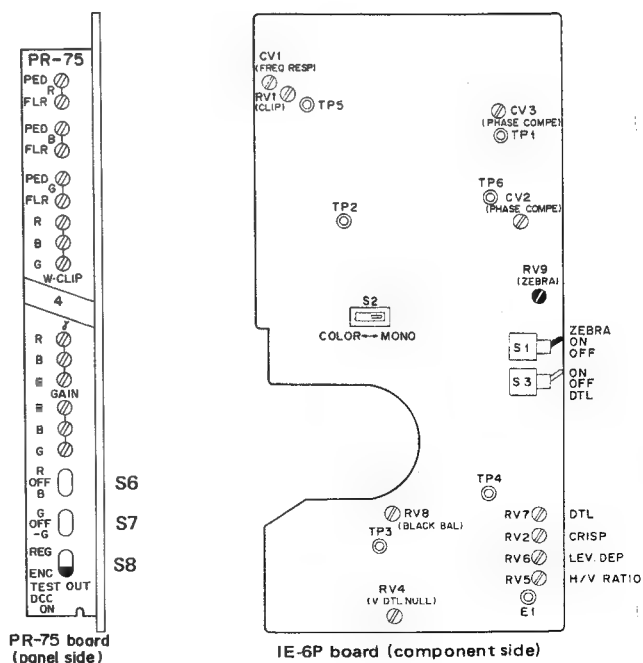
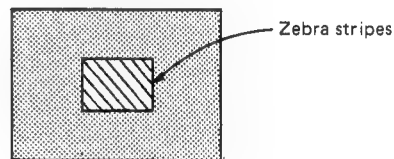
1. Shoot the white window chart as shown below.

Monitor



2. Adjust the iris control so that the video level at the TEST OUT terminal is 500 mV.
3. Adjust the  $\odot$  RV9/IE-6P board so that the viewfinder has zebra stripes.

Viewfinder

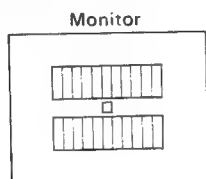


## [AUTO IRIS ADJUSTMENT]

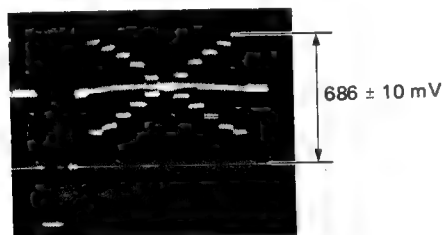
### 4-3-45. Iris Level Adjustment

Object : Grayscale chart  
 Equipment : Waveform monitor  
 Lens : AUTO/MANU switch → AUTO  
 Preparation : ●RV1/AT-16 board → Mechanical center

1. Adjust the zoom control so that the grayscale chart frame touches the underscanned picture frame on the monitor.

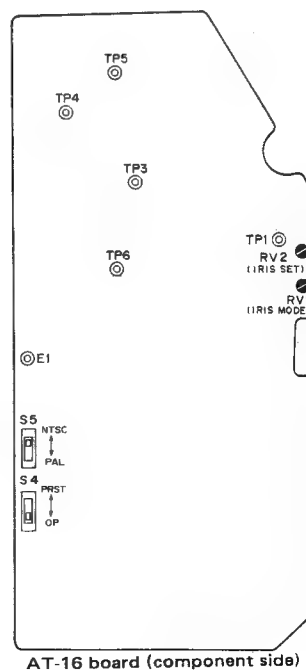


2. Adjust the ●RV2/AT-16 board so that the video level at the TEST OUT terminal is 690 mV.



### 4-3-46. Iris Mode Adjustment

Adjustment: By adjusting the ●RV1/AT-16 board, the iris drive mode can be varied between the mean value and the peak value of video signal. Ordinarily it is set in the middle between the mean and peak values. Adjust according to your purpose. When this adjustment is done, be sure to do the Iris Level Adjustment (4-3-44) too.

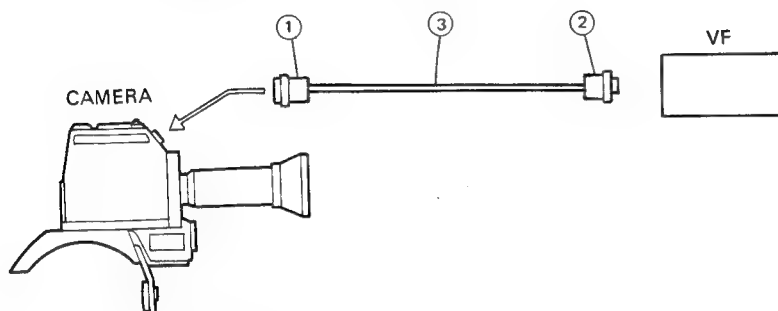


AT-16 board (component side)

## HOW TO MAKE THE VF EXTENSION CABLE

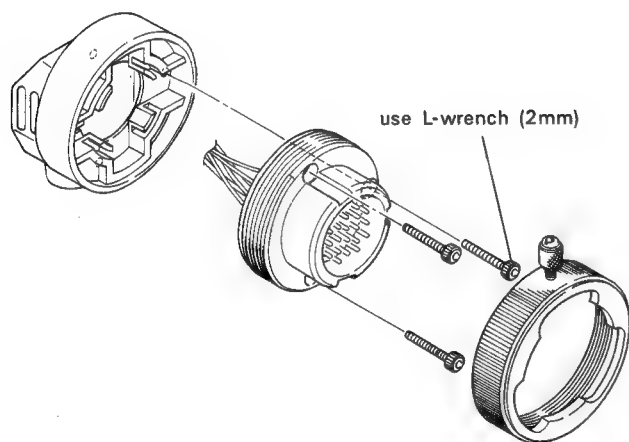
### 1. Requisite Parts.

- ① 20P-CONNECTOR (male) .... 1-560-704-21
- ② 20P-CONNECTOR (female) ... 1-561-812-00
- ③ CABLE (WIRE: Single ... 3, Shield ... 1)

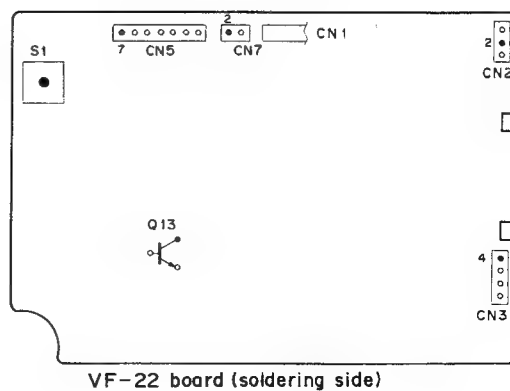
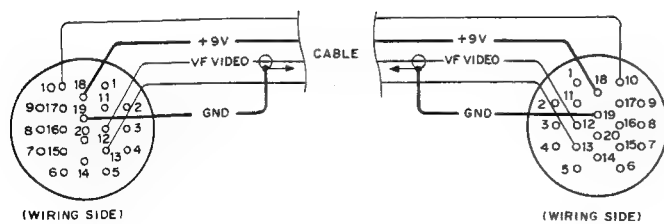


### 2. Remove 20P-Connector

ex: male



### 3. WIRING



## [VIEWFINDER SYSTEM ADJUSTMENT]

When adjusting the viewfinder, turn it 180° so that it is upside down.  
Be sure that the camera is adjusted completely.  
Set the lens iris to AUTO, unless otherwise specified.

### 4-3-47. V Hold Adjustment

Equipment : Oscilloscope  
Preparation : Pull the IE-6 board out of the Camera.  
Set the RV9/VF-22 board to mechanical center unless otherwise marked.  
To be measured : 4 pin of CN3 (GND: E1)  
To be adjusted : RV7/VF-22 board  
Specification :  $T = 25.6 \pm 0.5 \text{ ms}$



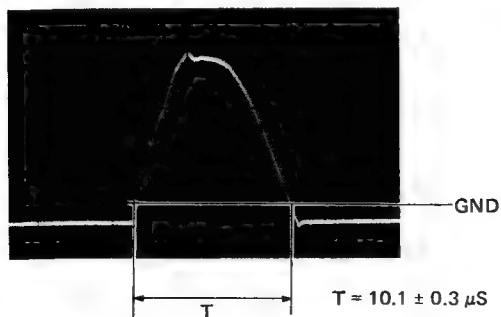
**Note:** After this adjustment is completed, insert the IE-6P board into the Camera.

### 4-3-48. Flyback Pulse Width Adjustment

**Note:** Carry out this adjustment only when the T2 (FLYBACK) /VF-22 board is replaced.

Measuring equipment: Oscilloscope (AC mode)  
Preparations : **BRIGHT** → Fully counterclockwise ⤴  
                  : **CONTR** → Fully counterclockwise ⤴  
To be measured : Collector of Q13/VF-22 board (GND: E1)  
Specification :  $T = 10.1 \pm 0.3 \mu\text{s}$

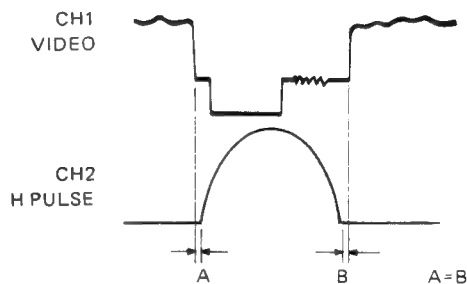
1. When the Flyback pulse width is out of the specification, replace the C19/VF-22 board from the list below so that the pulse width meets the specification.



C19:	1-136-287-11	0.0047μF
	1-136-288-11	0.0051μF
	1-136-289-11	0.0056μF
	1-136-290-11	0.0062μF
	1-136-291-11	0.0068μF
	1-136-292-11	0.0075μF
	1-136-293-11	0.0082μF

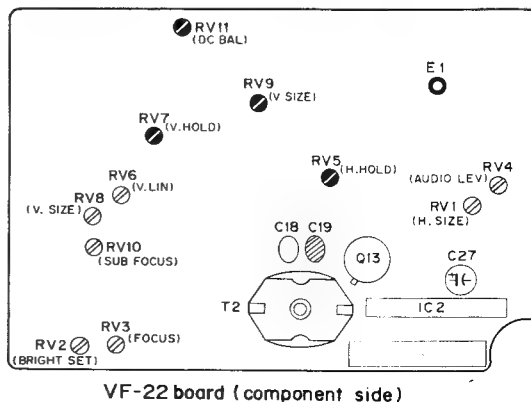
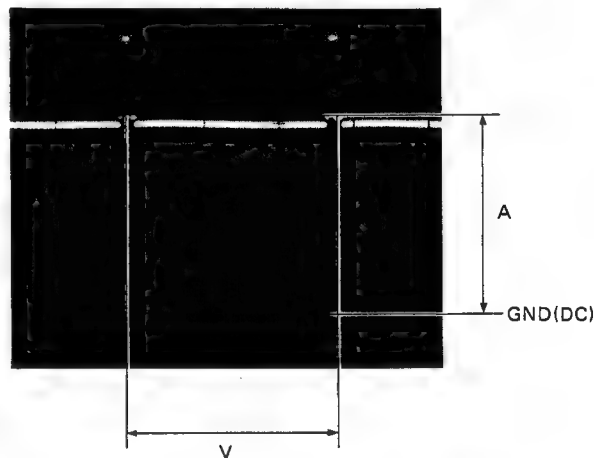
### 4-3-49. Horizontal Hold Adjustment

Measuring equipment : Oscilloscope  
To be measured : CH1 2 pin of CN7/VF-22 board  
                      : CH2 collector of Q13/VF-22 board (GND: E1)  
Trigger : CH2  
To be adjusted : RV5/VF-22 board



### 4-3-50. DC Balance Adjustment

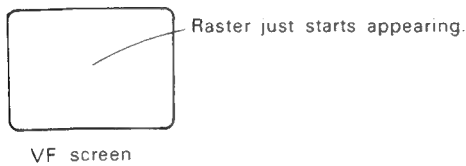
Lens : Close  
Measuring equipment: Oscilloscope  
To be measured : 2 pin of CN2 (GND: E1)  
To be adjusted : RV11/VF-22 board  
Specification :  $A = 47 \pm 2 \text{ V}$



#### 4-3-51. Brightness Adjustment

Lens : Close  
 Preparations : **BRIGHT** → mechanical center  
                   **CONTR** → Fully counterclockwise ⤿  
 To be adjusted : ⚙ RV2/VF-22 board

1. Adjust the ⚙ RV2/VF-22 board at the point where the raster just starts appearing.

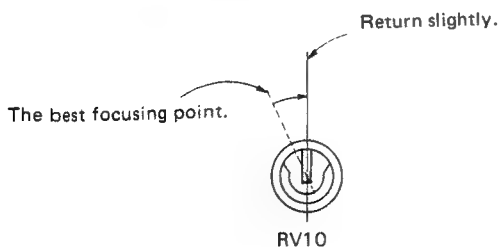


#### 4-3-52. Focus Adjustment

**Note:** 4-3-53 Picture Frame Adjustment and this adjustment affect each other, so carry out these adjustment alternately until both specifications are satisfied.

Object : Resolution chart  
 Lens : AUTO/MANU switch → "MANU"  
 Preparations : S4 **WHT CLIP, KNEE** /PR-75 board → OFF  
                   **BRIGHT** → Mechanical center  
                   **CONTR** → Fully clockwise ⤿  
                   S1 (PEAKING) → OFF  
                   ⚙ RV10 → Fully clockwise ⤿ } VF-22 board

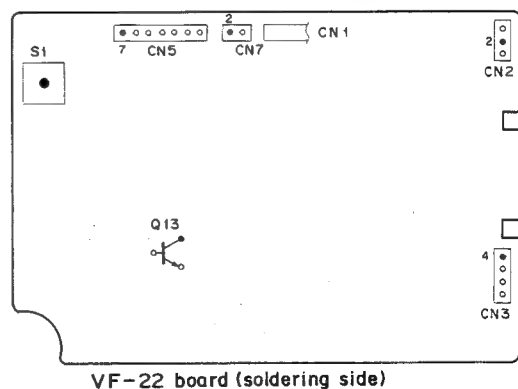
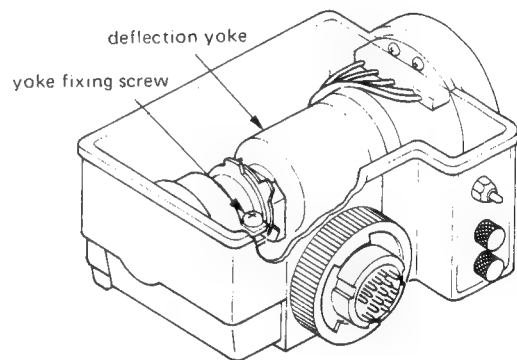
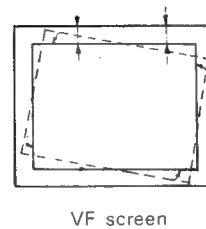
1. Adjust the lens iris so that the video level at TEST OUT terminal is 100 %.
2. Adjust the ⚙ RV3/VF-22 board so that the picture on the CRT is the best focused.
3. S1 (PEAKING) → ON
4. Turn the ⚙ RV10/VF-22 board counterclockwise ⤿ until the high peaked edges of the picture are the best focused, then return the ⚙ RV10 slightly.



#### 4-3-53. Deflection Yoke Tilt Adjustment

Adjustment

1. Loosen the deflection yoke fixing screw and turn the yoke until any inclination on the viewfinder picture is eliminated.
2. After this adjustment is completed, tighten the fixing screw.



5. Set the S1 (PEAKING) at "OFF" and carry out Step 2 again.

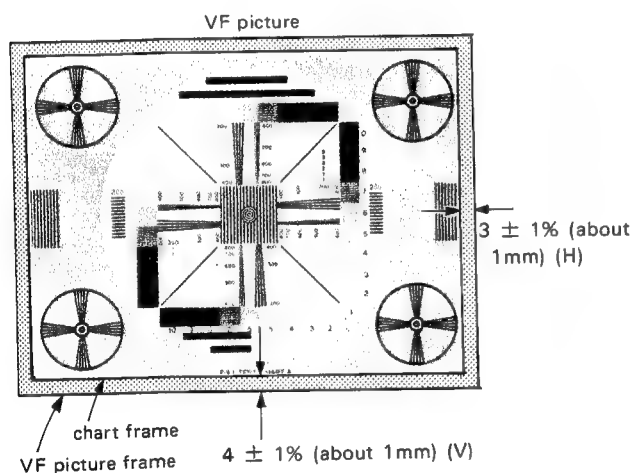
**Note:** After this adjustment is completed, set the S4 **WHT CLIP, KNEE** /PR-75 board at "ON".

#### 4-3-54. Picture Frame Adjustment

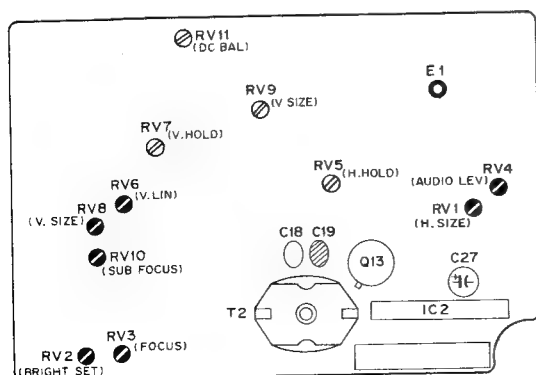
**Note:** 4-3-51. Focus Adjustment and this adjustment affect each other, so carry out these adjustment alternately untill both specifications are satisfied.

Object : Resolution chart  
 Preparations : Remove the eyecup from the viewfinder.  
 S1 (PEAKING)/VF-22 board → OFF  
 BRIGHT → Mechanical center  
 CONTR → Mechanical center

1. Adjust the zoom control so that the Resolution chart frame touches the underscanned picture frame on the monitor.
2. Adjust the centering magnet so that the resolution chart is located in the center of the VF picture.
3. Adjust the RV1/VF-22 board so that the H size is underscanned  $3 \pm 1\%$  (about 1mm) from the VF picture frame.
4. Adjust the RV8/VF-22 board so that the V size is underscanned  $4 \pm 1\%$  (about 1mm) from the VF picture frame.



5. Adjust the RV6/VF-22 board so that the each circle on the corners of the Resolution chart becomes a true circle.
6. Adjust the centering magnet again so that the resolution chart is located in the center of the VF picture.
7. Adjust the inclination of the deflection yoke to a horizontal picture.

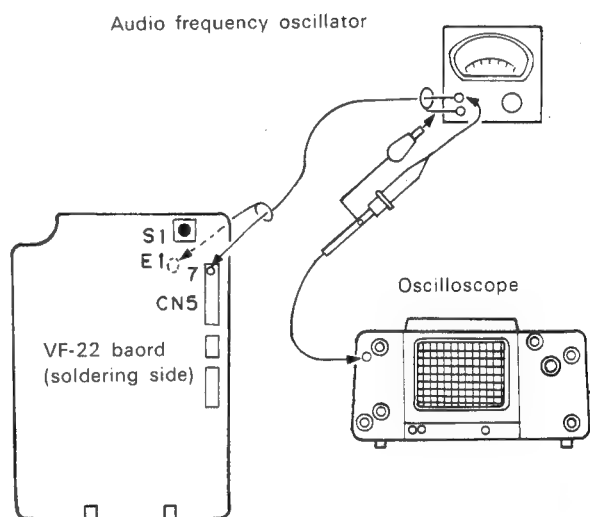


VF-22 board (component side)

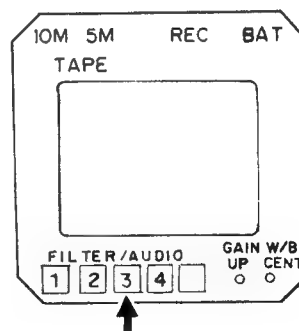
#### 4-3-55. Audio Level Adjustment

**Note:** This adjustment can non be performed when a VTR (BVV-1A) is attached. So perform this adjustment with a BVP-3A alone.

Measuring equipment: Oscilloscope  
 Audio frequency oscillator  
 Preparations : AUDIO/FILTER switch → "AUTO"  
 ZEBRA/TALLY switch → "OFF (center)"  
 To be adjusted : RV4/VF-22 board  
 Connection :



1. Adjust the RV4/VF-22 board so that the 3 (LED) on the indication plate of the viewfinder lights up slightly when the sine-wave, 1 KHz, 0.332 Vp-p is fed to pin 7 of CN5, and 3 (LED) goes off when the sine-wave level is reduced to 0.328 Vp-p.







#### 4-4. PARTIAL ADJUSTMENT

In this section, adjustment items requiring adjustment quite frequently are selected. When performing adjustments, items which must be checked in advance and those which have to be performed later after the adjustments are shown in the flow charts.

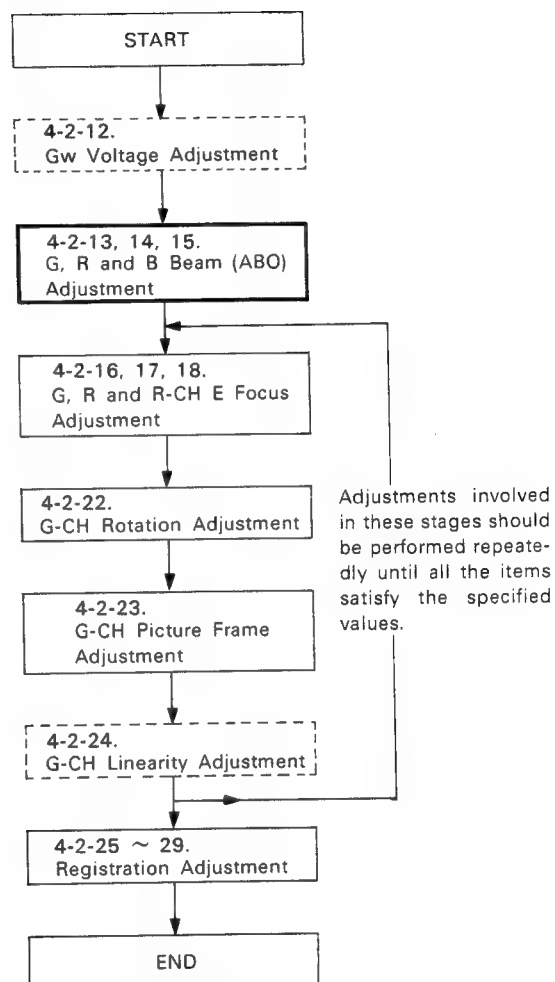
Be sure to make adjustments in accordance with the flow charts.

  = Items encircled are to be confirmed and if they do not meet the specified values, further adjustments should be performed.

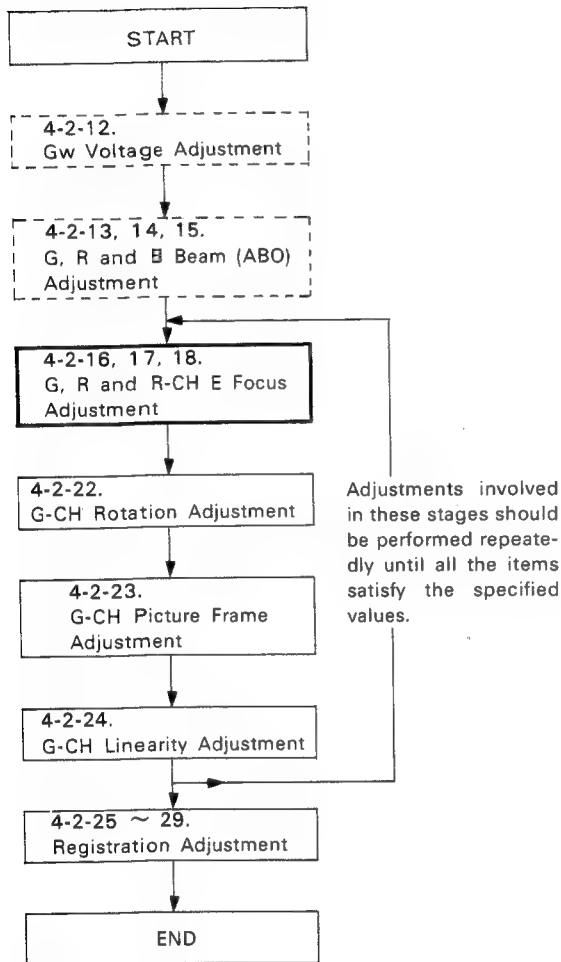
  = Items encircled are the required adjustments.

  = Items which further adjustments must be performed even after the necessary adjustments encircled with the bold-faced frame have been achieved.

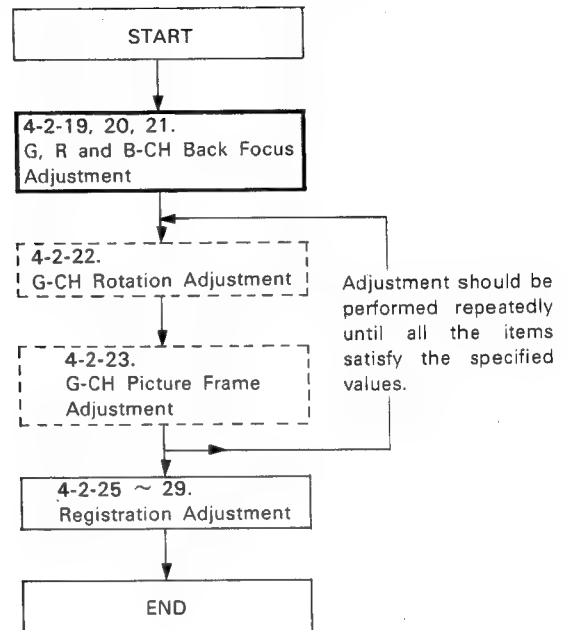
#### BEAM • ABO adjustment



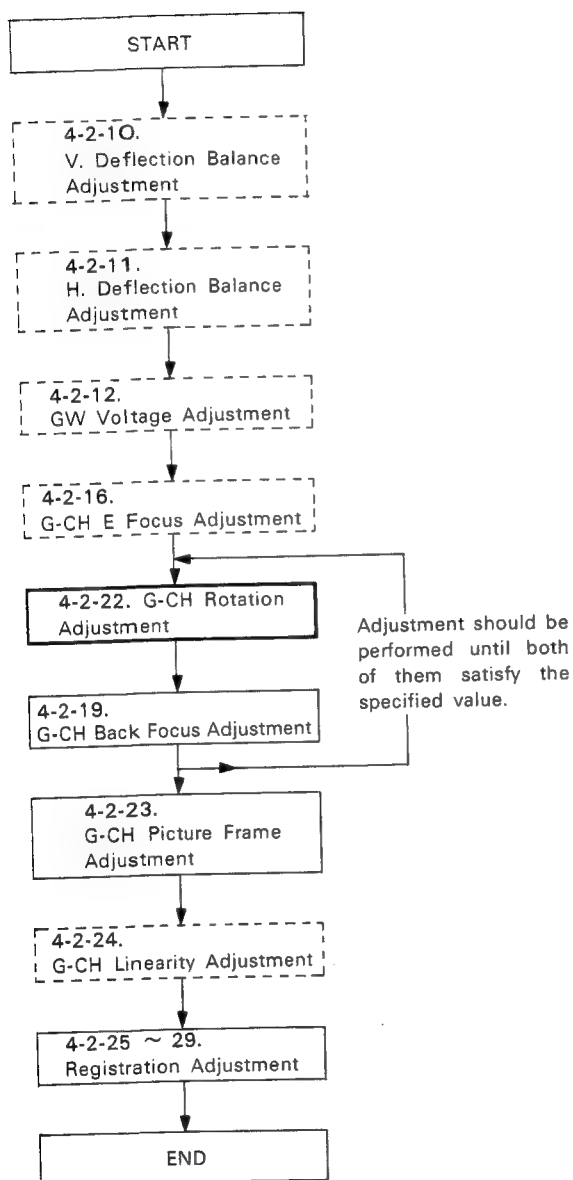
## ELECTRICAL FOCUS adjustment



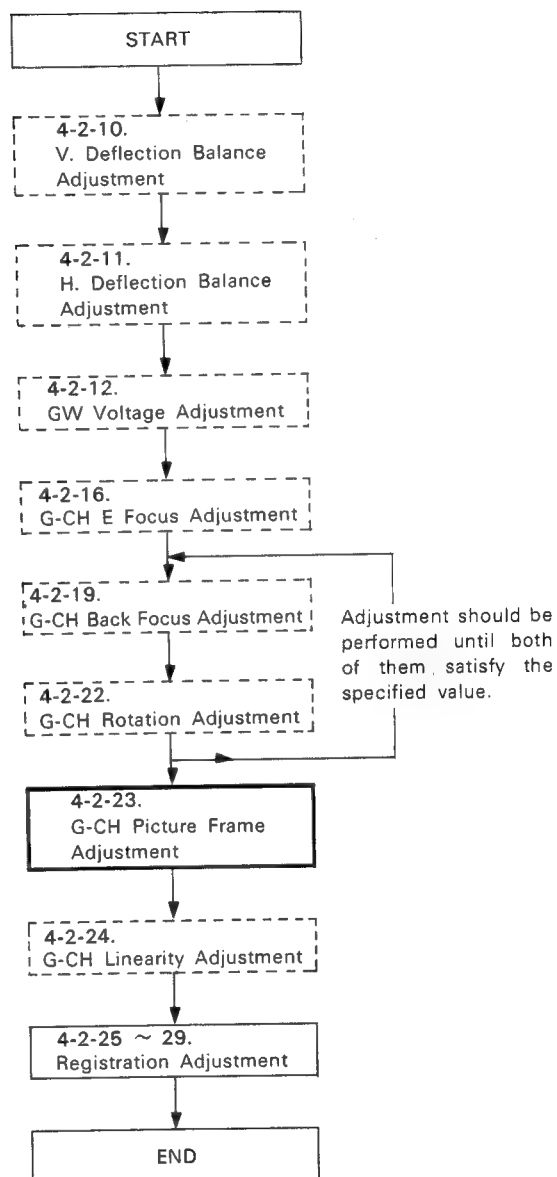
## MECHANICAL BACK FOCUS adjustment



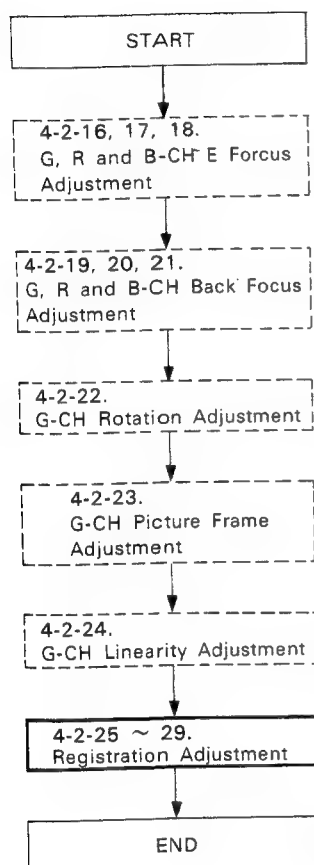
## G-CH ROTATION adjustment



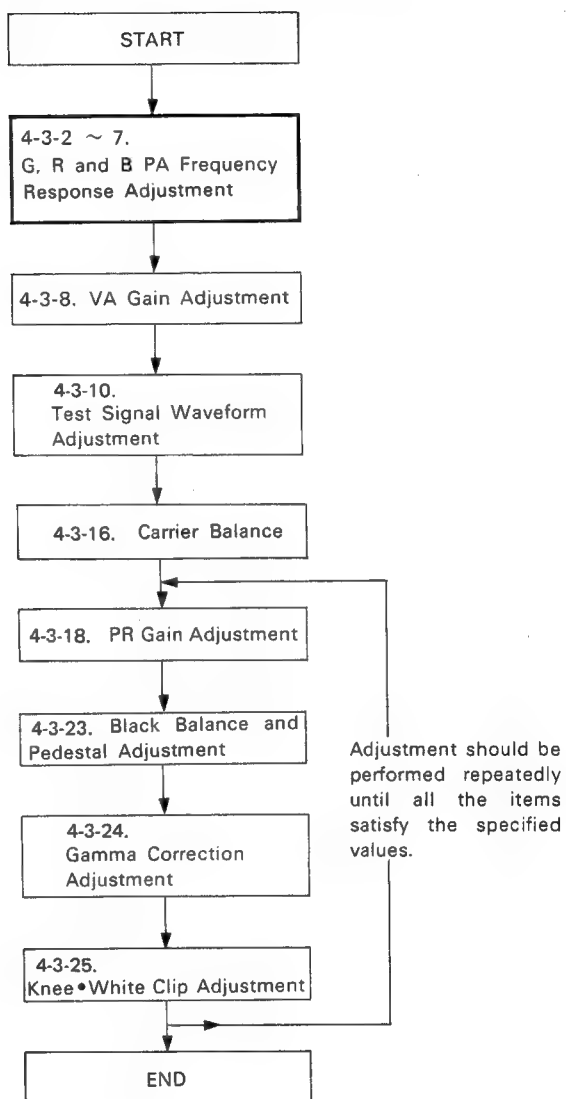
## G-CH PICTURE SIZE adjustment



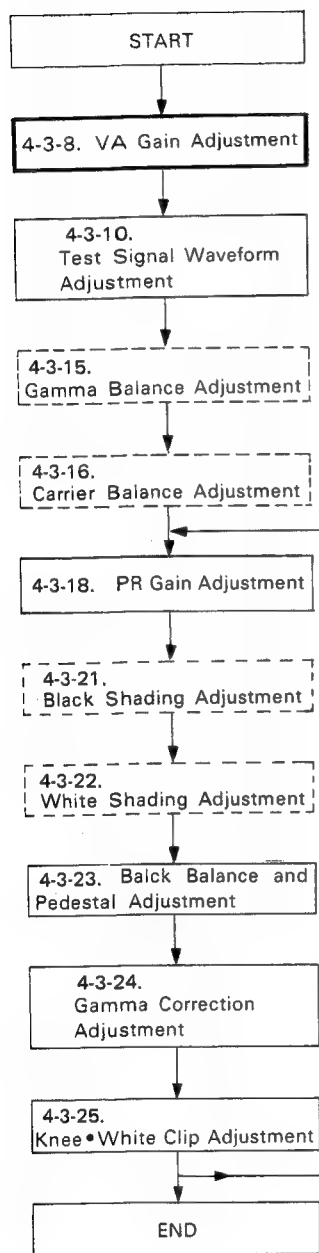
## REGISTRATION adjustment



## PRE-AMP FREQUENCY RESPONSE adjustment

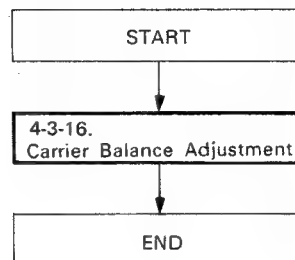


## WHITE BALANCE (PRESET) adjustment

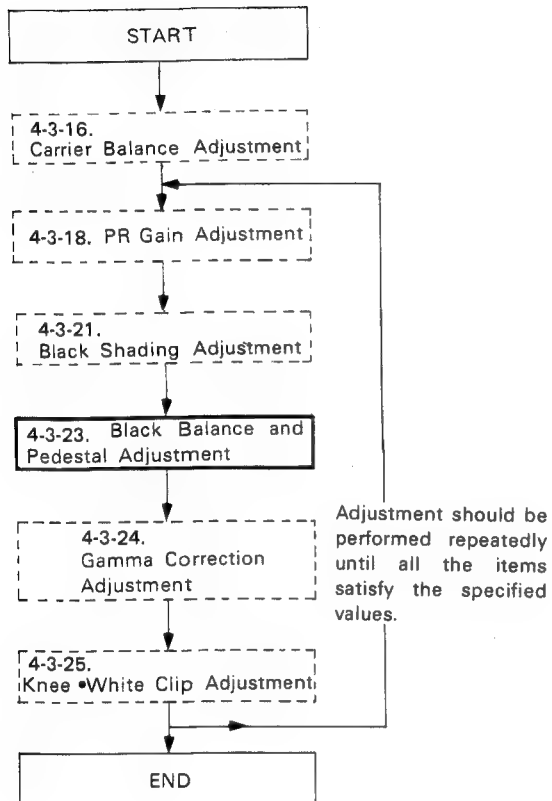


Adjustment should be performed repeatedly until all the items satisfy the specified values.

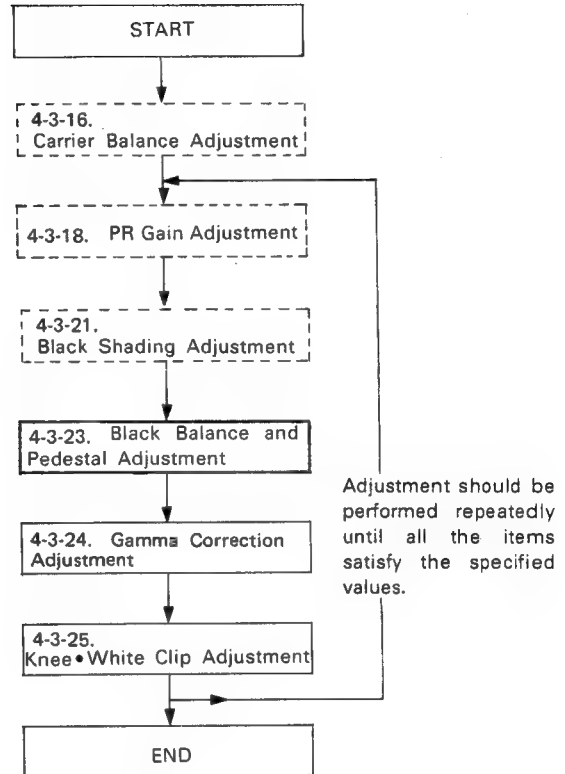
## CARRIER BALANCE adjustment



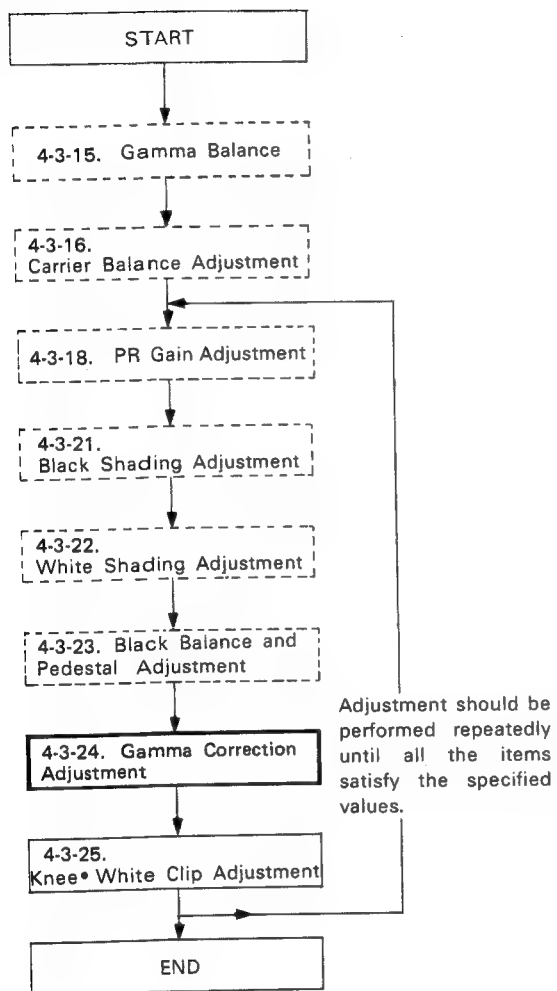
## BLACK BALANCE adjustment



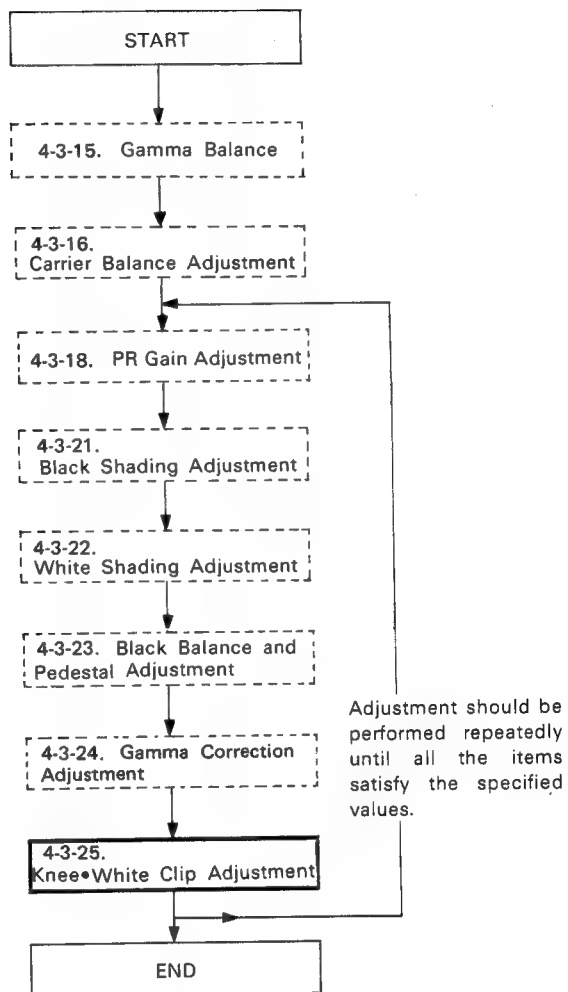
## PEDESTAL adjustment



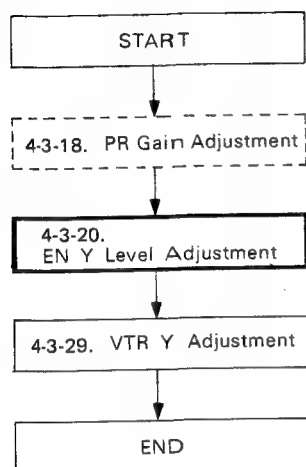
## GAMMA adjustment



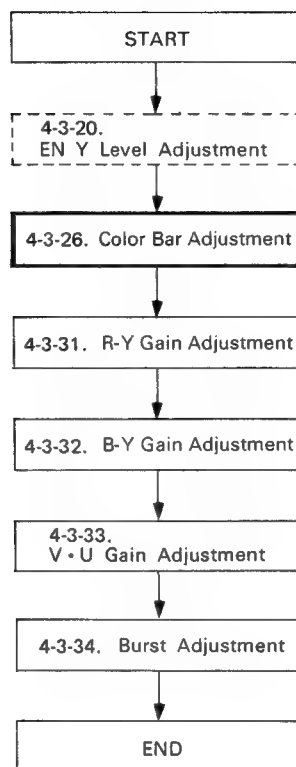
## KNEE • WHITE CLIPE adjustment



## SETUP • Y LEVEL adjustment



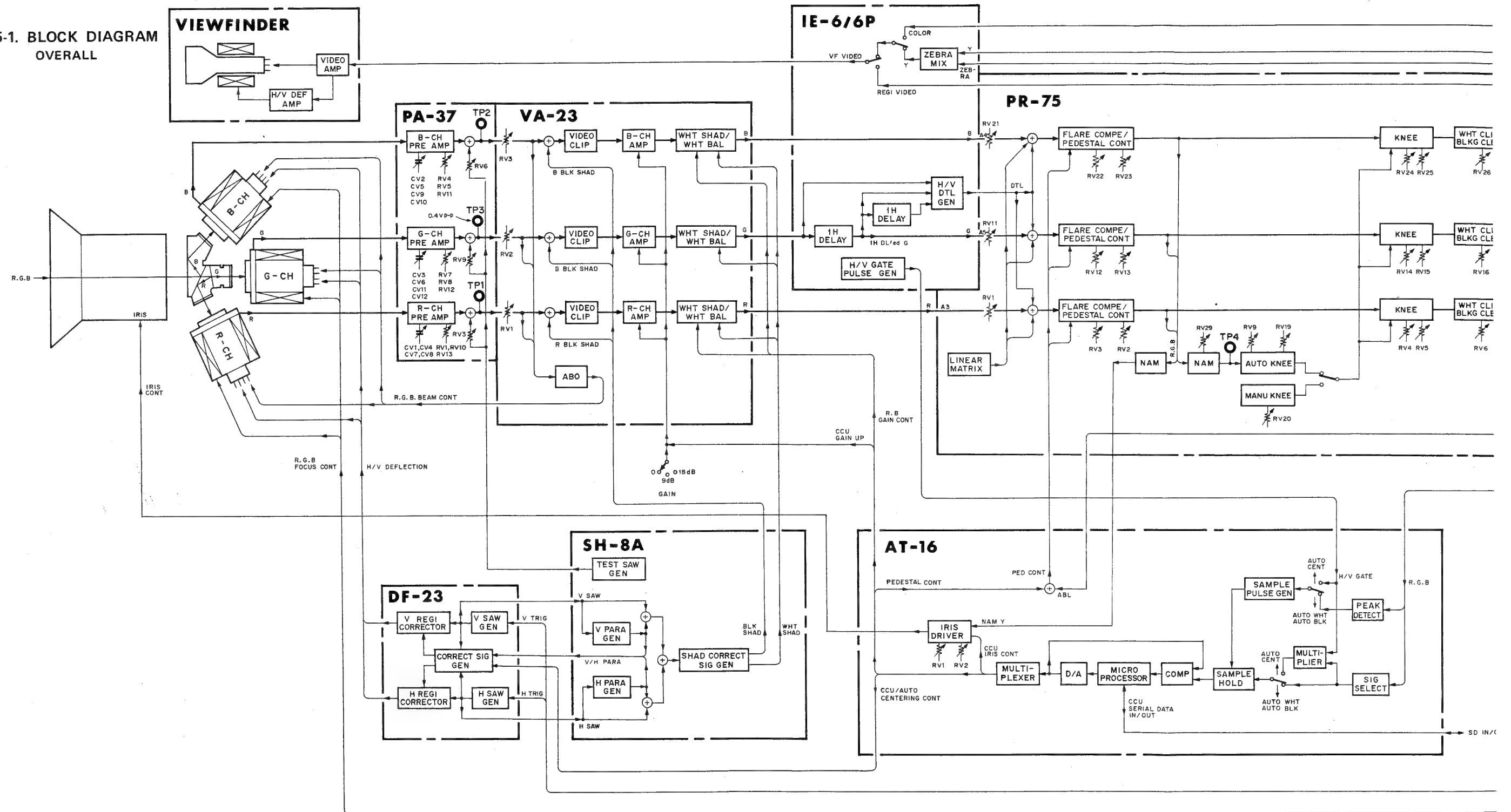
## COLOR-BAR adjustment

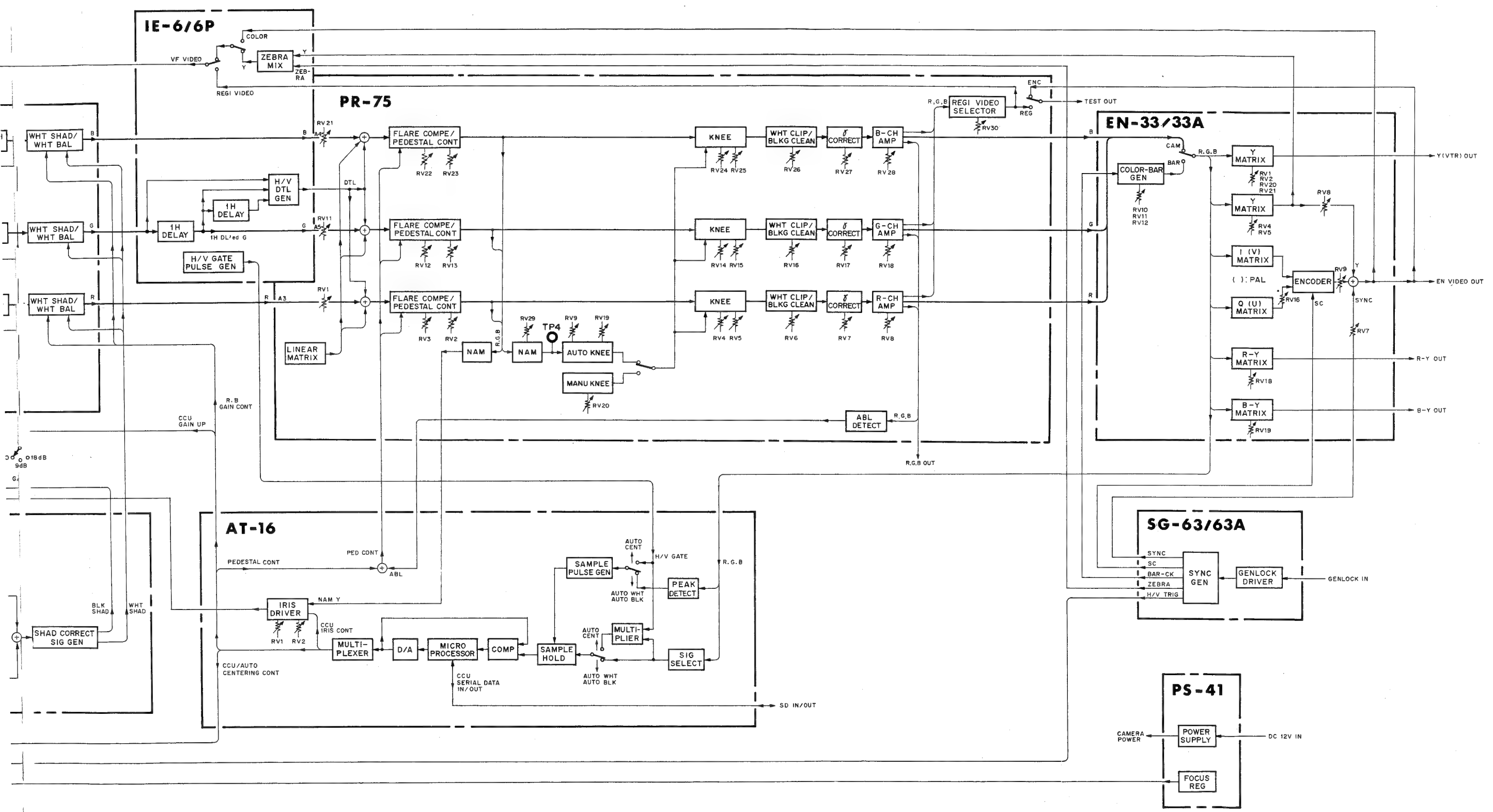




# SECTION 5 DIAGRAM

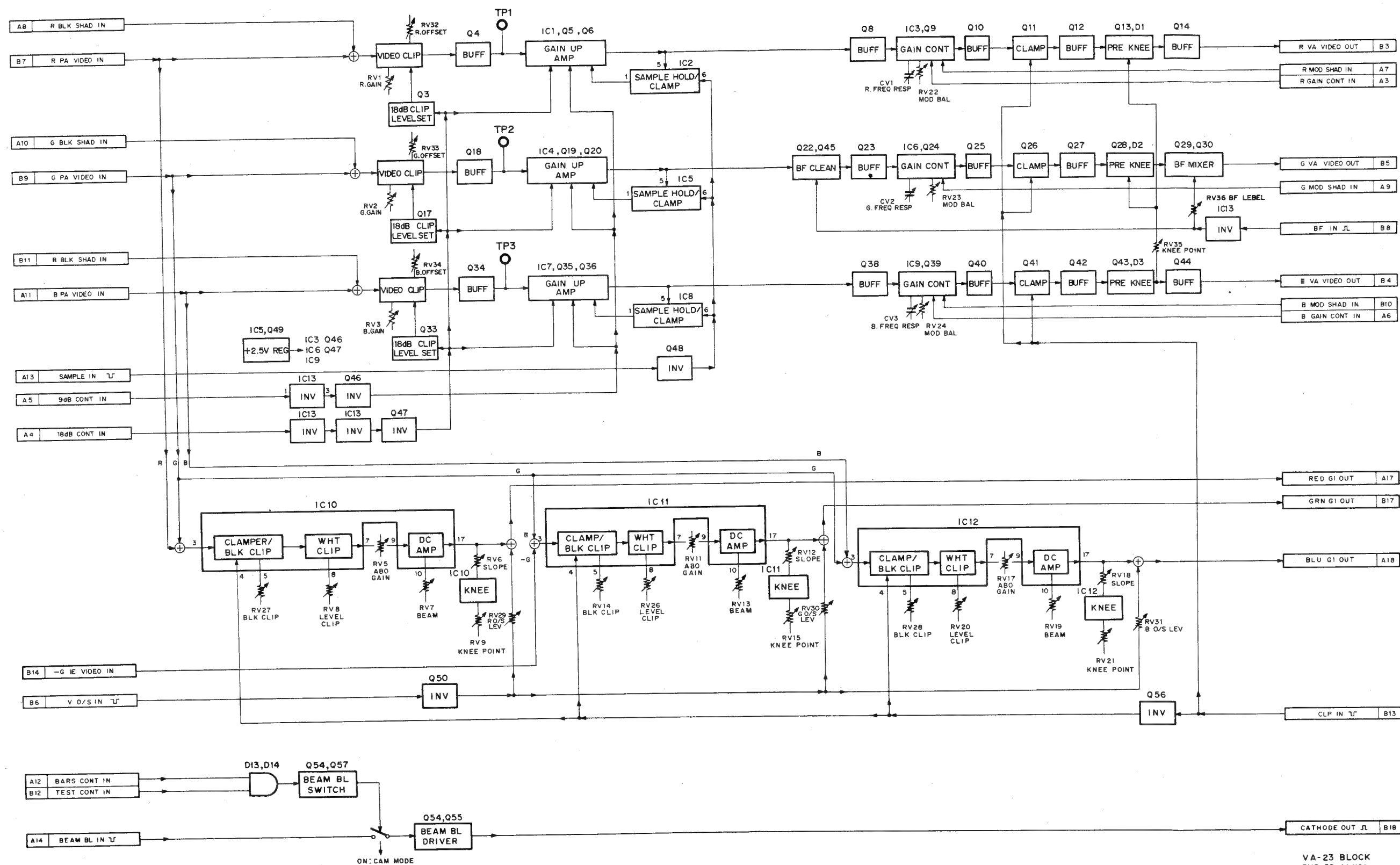
5-1. BLOCK DIAGRAM  
OVERALL





OA BLOCK  
BVP-30(J,UC)  
BVP-30AP(EK)

## VA-23 BOARD



1-20 H SAW

1-16 H SAW

1-32 H PARA

1-26 H PARA

1-36 V PARA

1-28 V PARA

1-14 V SAW

1-18 V SAW

1-31 IRIS GATE

1-7 EXTENDER ON

2-44 V F VIDEO

2-64 V F VIDEO

1-42 RET VIDEO

1-37 CAM VIDEO

1-45 RET VIDEO

1-33 EIA/CCIR B

1-35 PB REF 1P

5-43 F ADDRESS

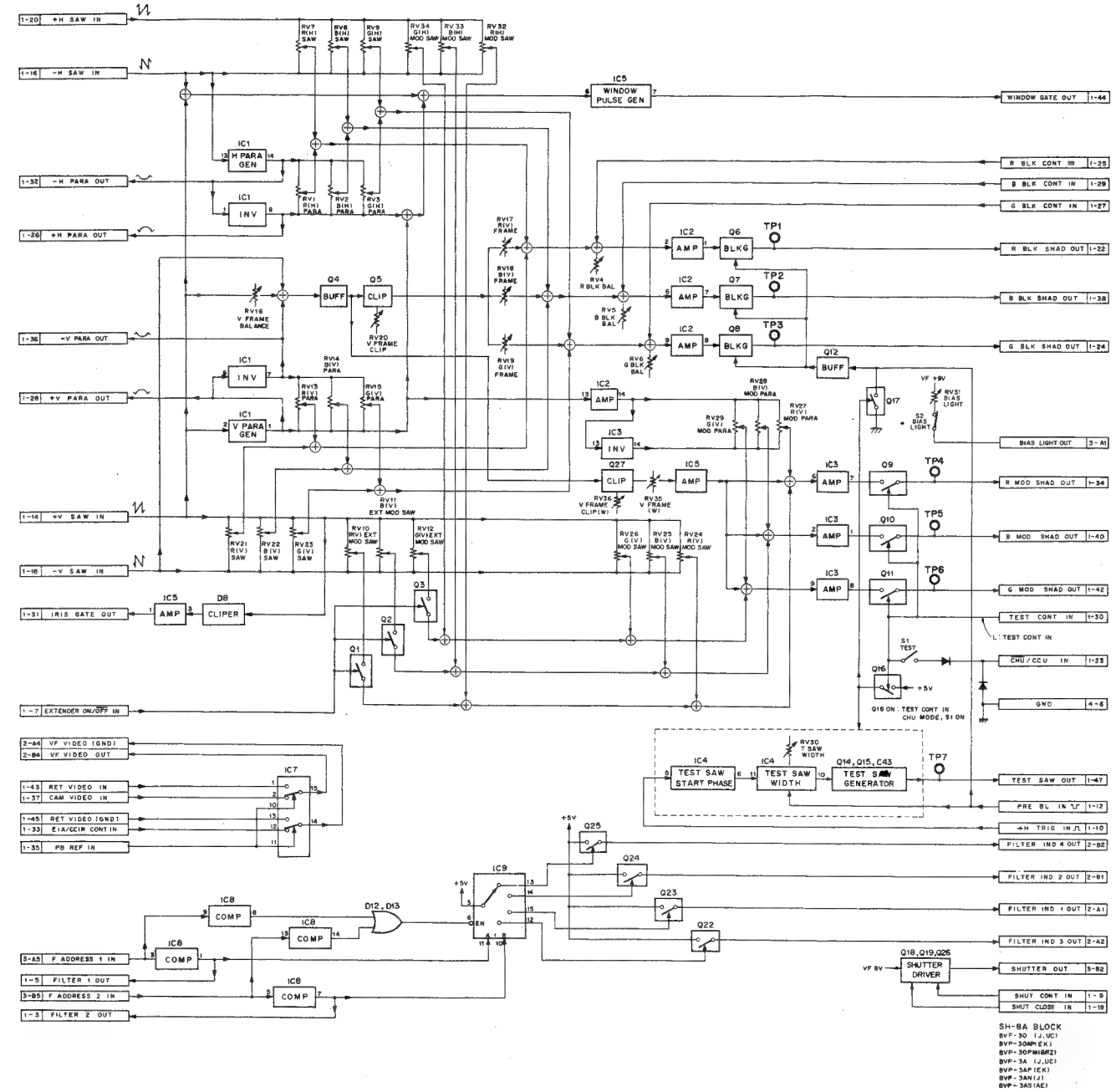
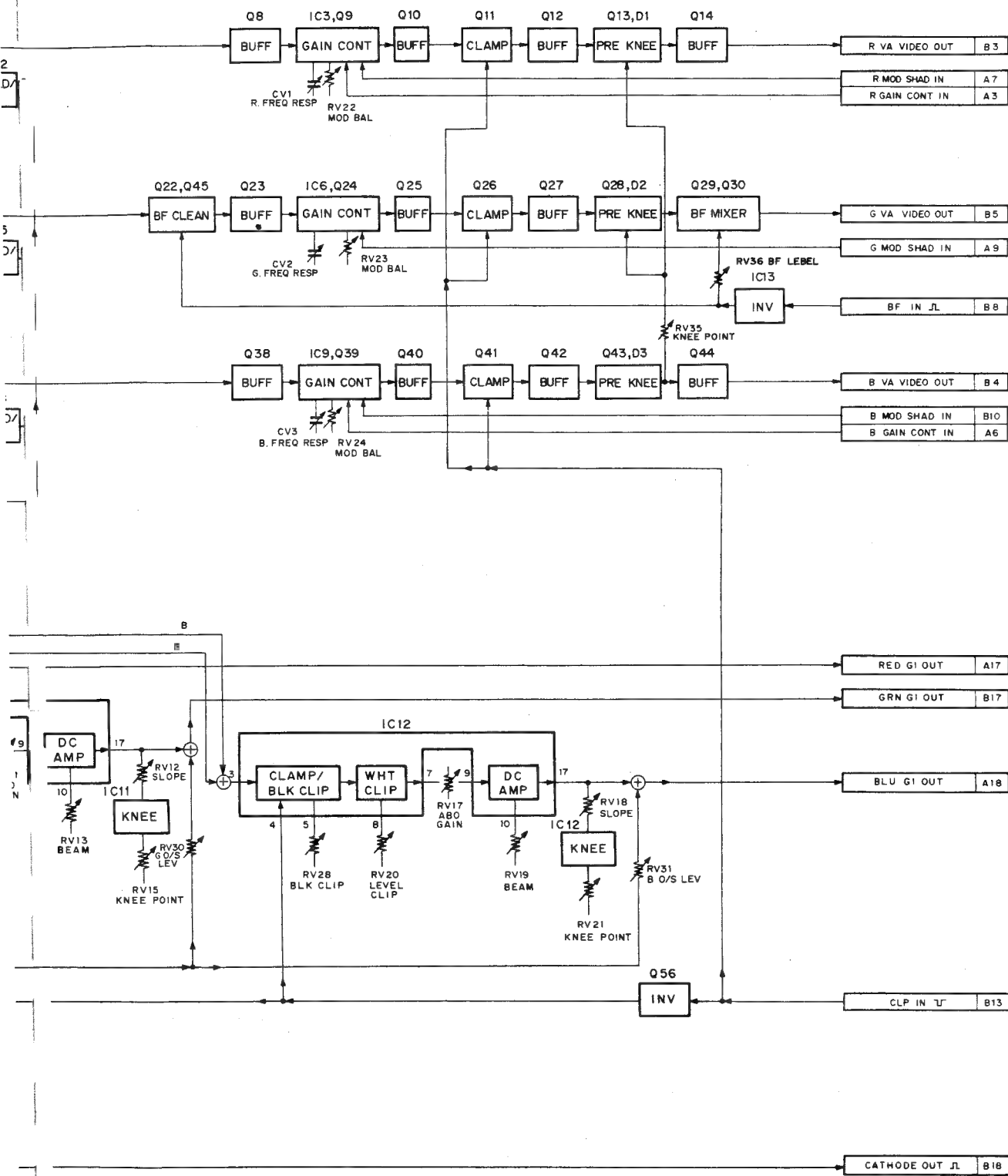
1-5 FILTER 1

5-85 F ADDRESS

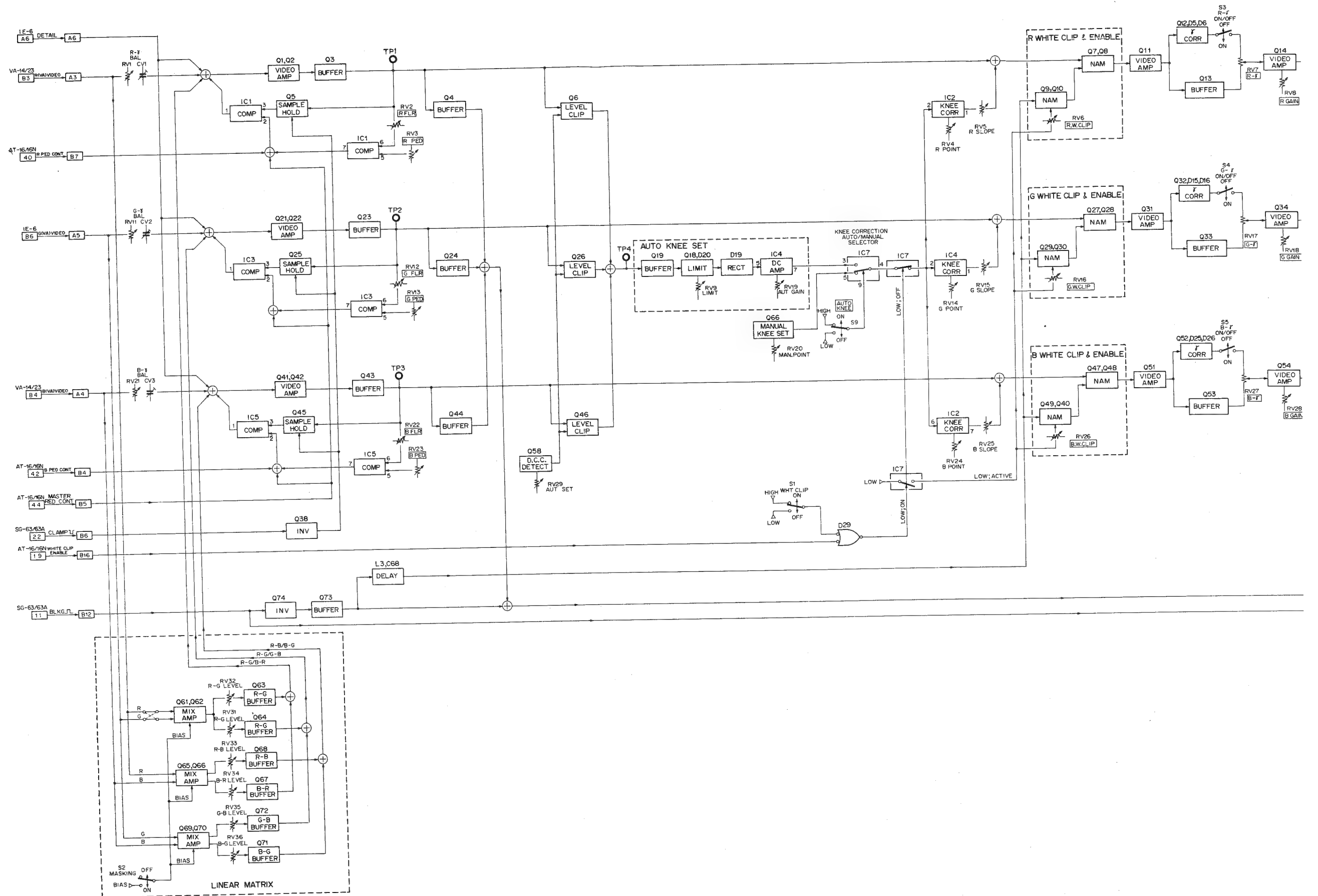
1-5 FILTER 2

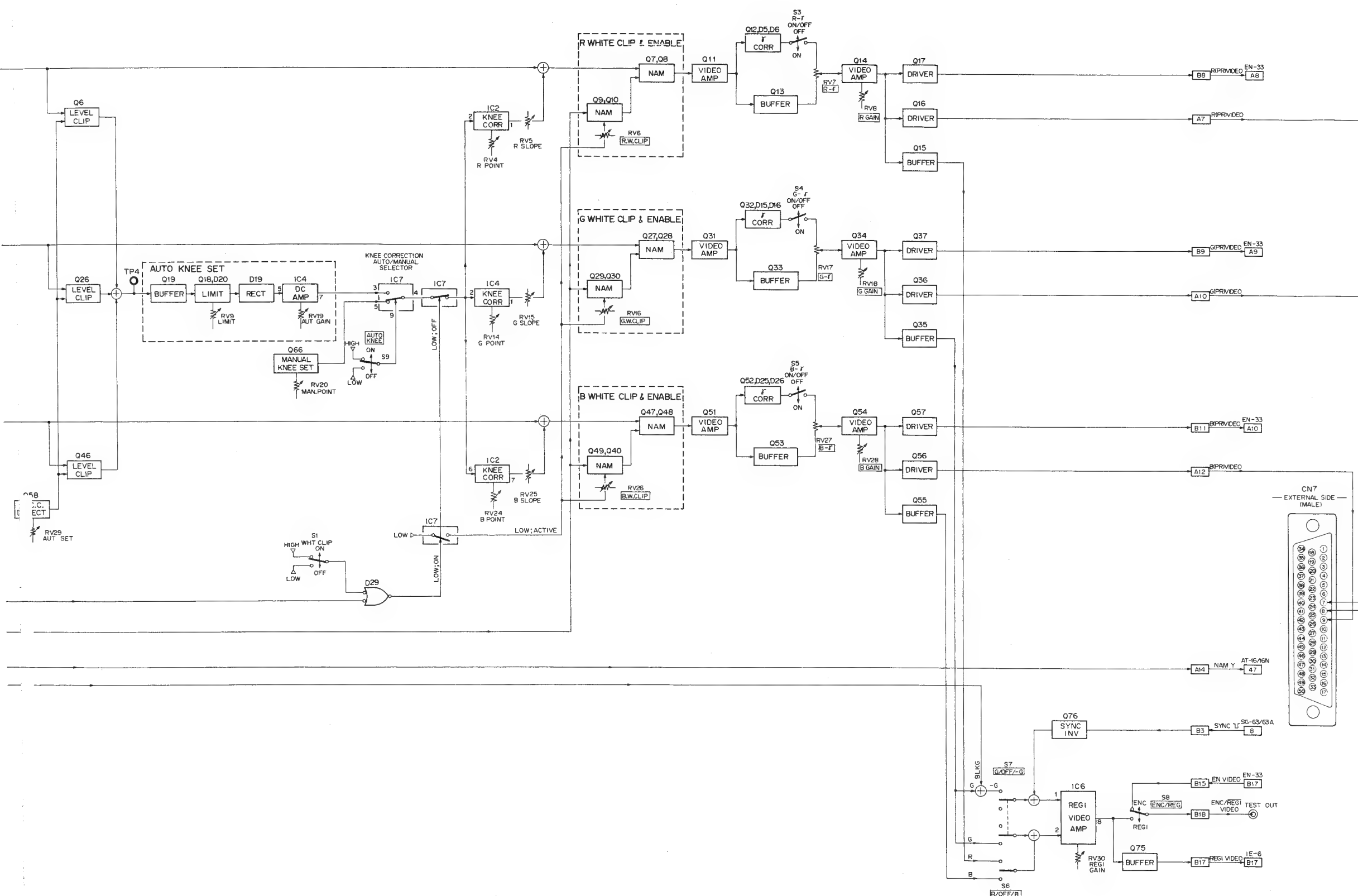
VA-23 BLOCK  
 BVP-30 (JUC)  
 BVP-30AP (EK)  
 BVP-30PM (BRZ)

SH-8A BOARD



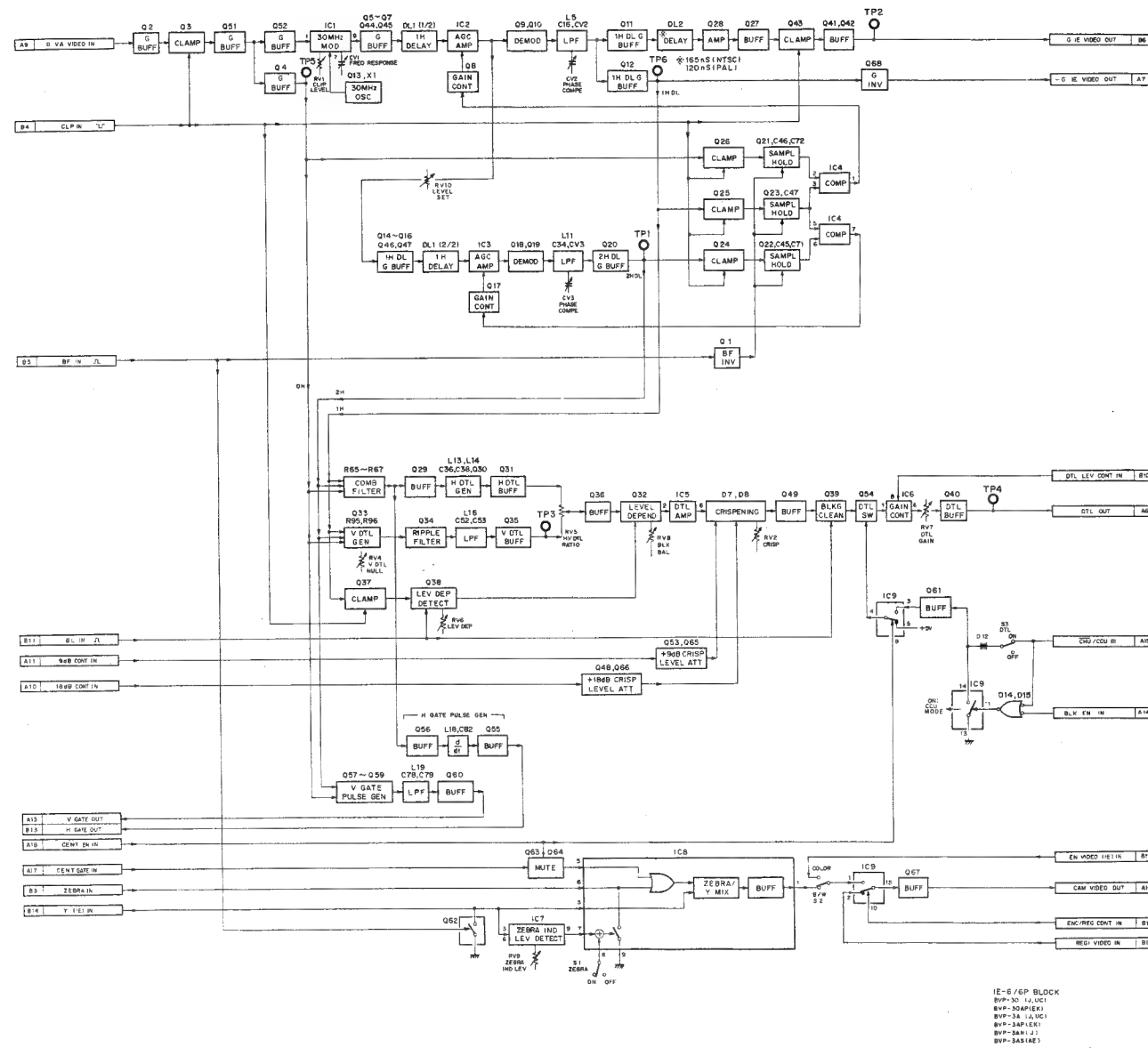
PR-75 BOARD



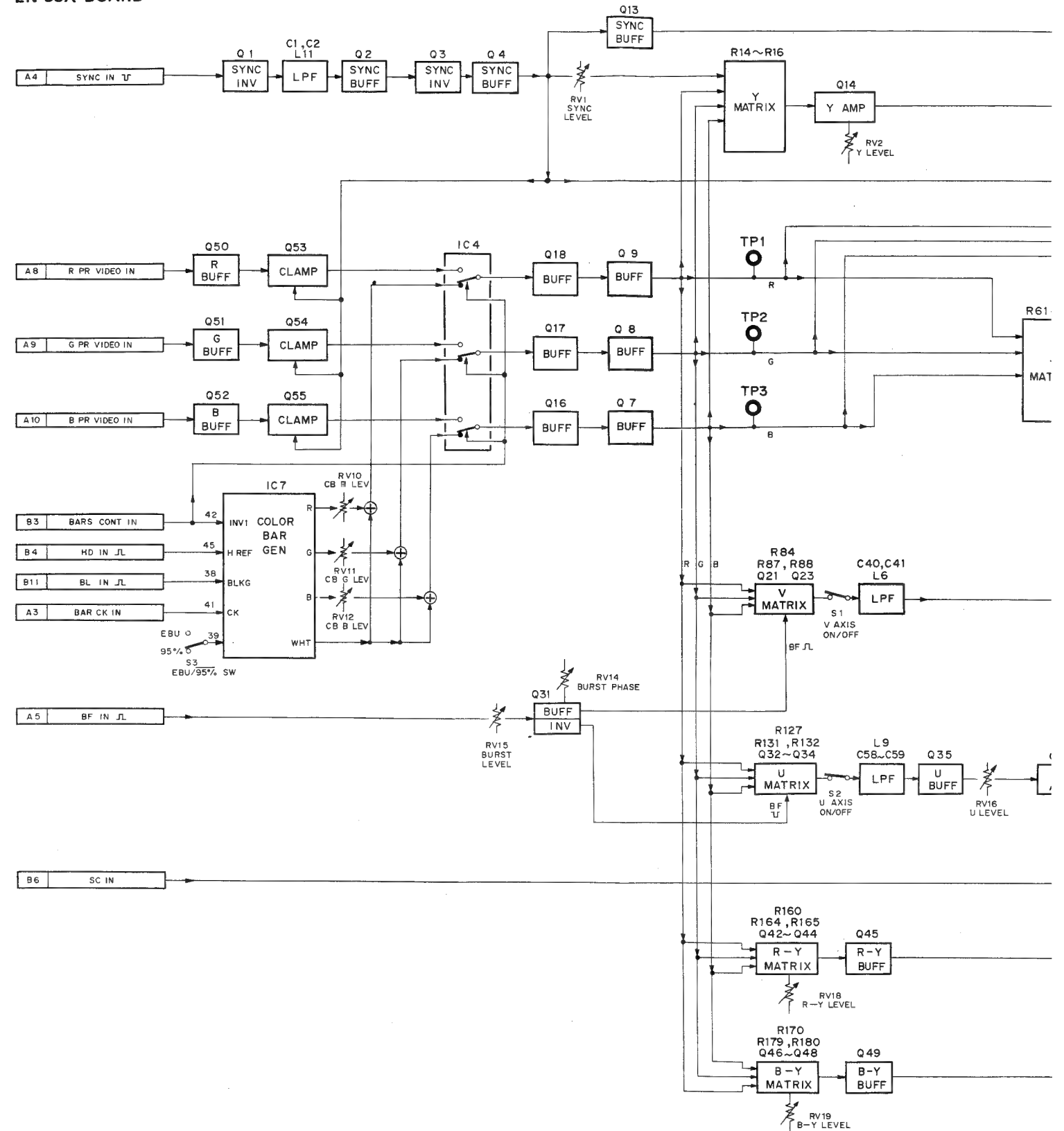


**PR-75 BLOCK**  
 BVP-3A (J,UC)  
 BVP-3AP (EK)  
 BVP-3AN (J)  
 BVP-3AS (AE)  
 BVP-3D (J,UC)  
 BVP-3DAP (EK)

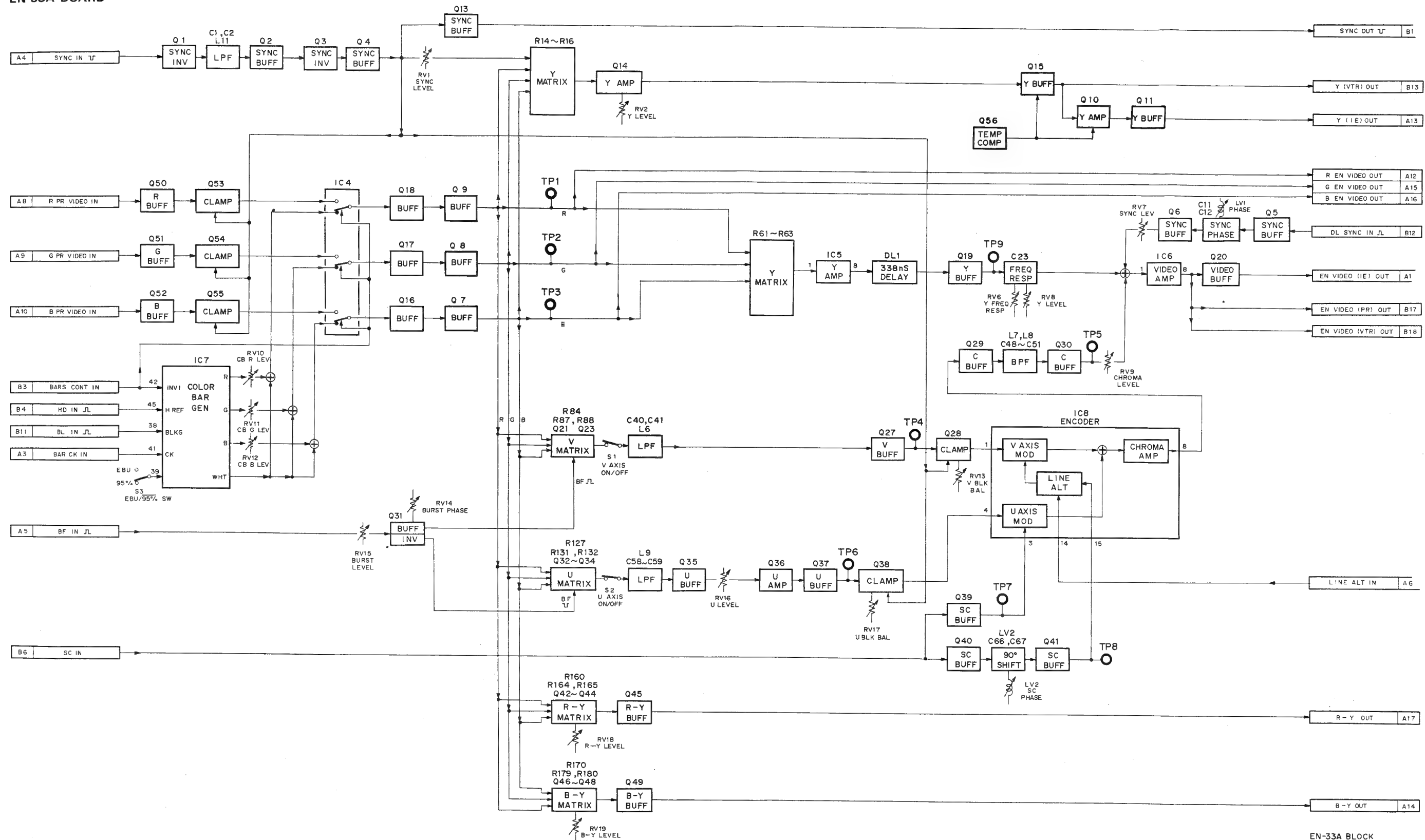
## IE-6P BOARD



## EN-33A BOARD



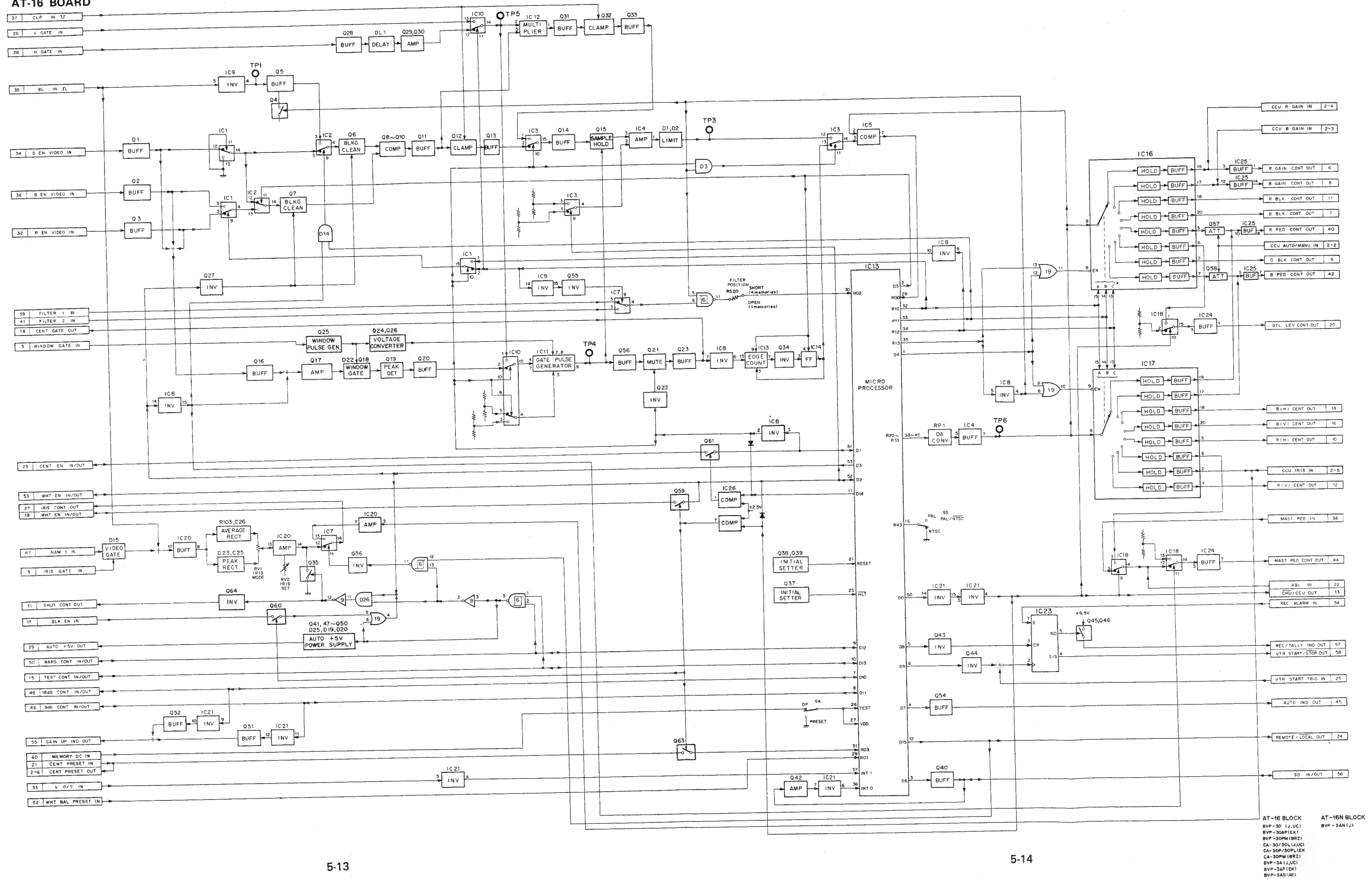
EN-33A BOARD



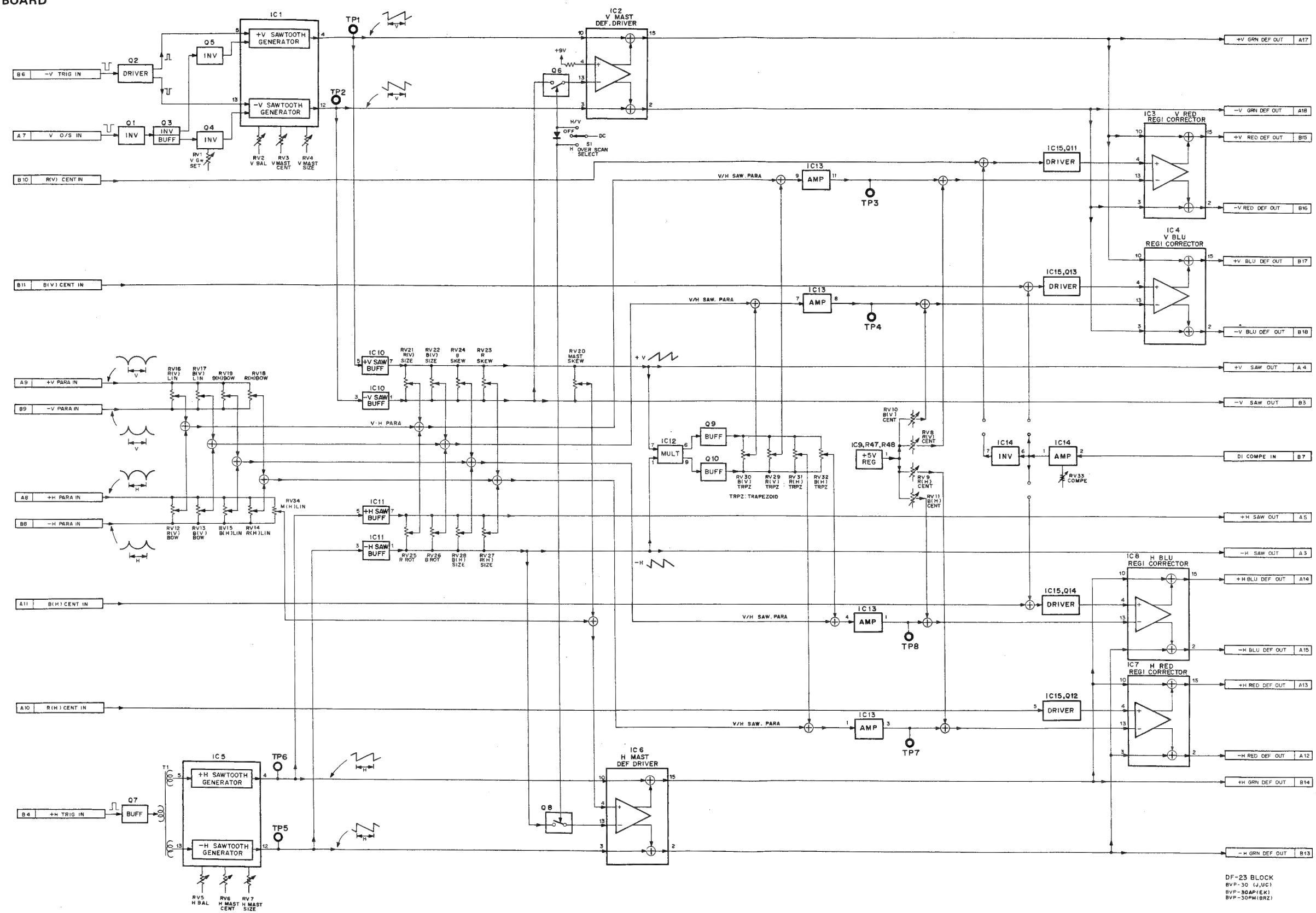
EN-33A BLOCK  
BVP-30AP (EK)  
BVP-3AP (EK)



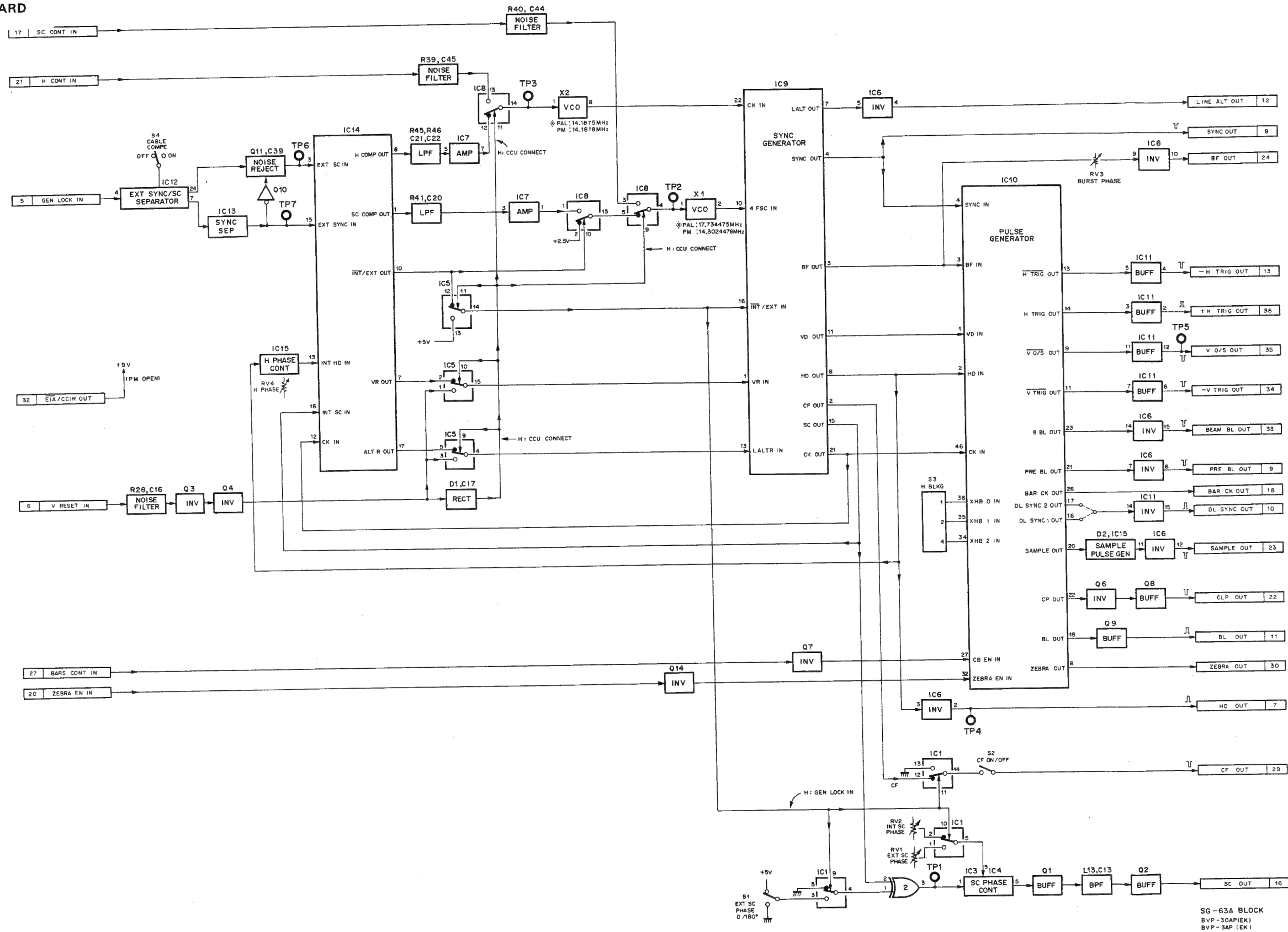
# AT-16 BOARD



DF-23 BOARD

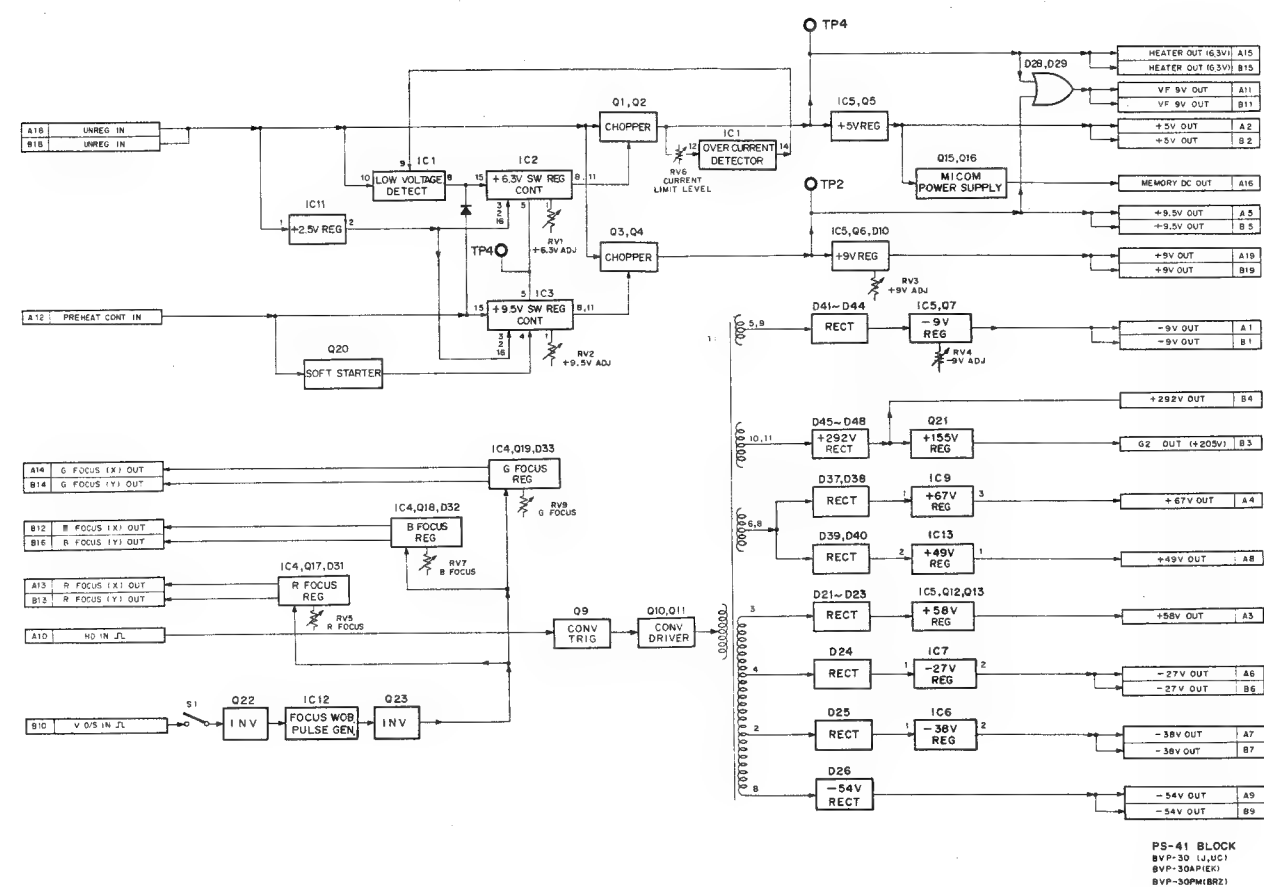


SG-63A BOARD

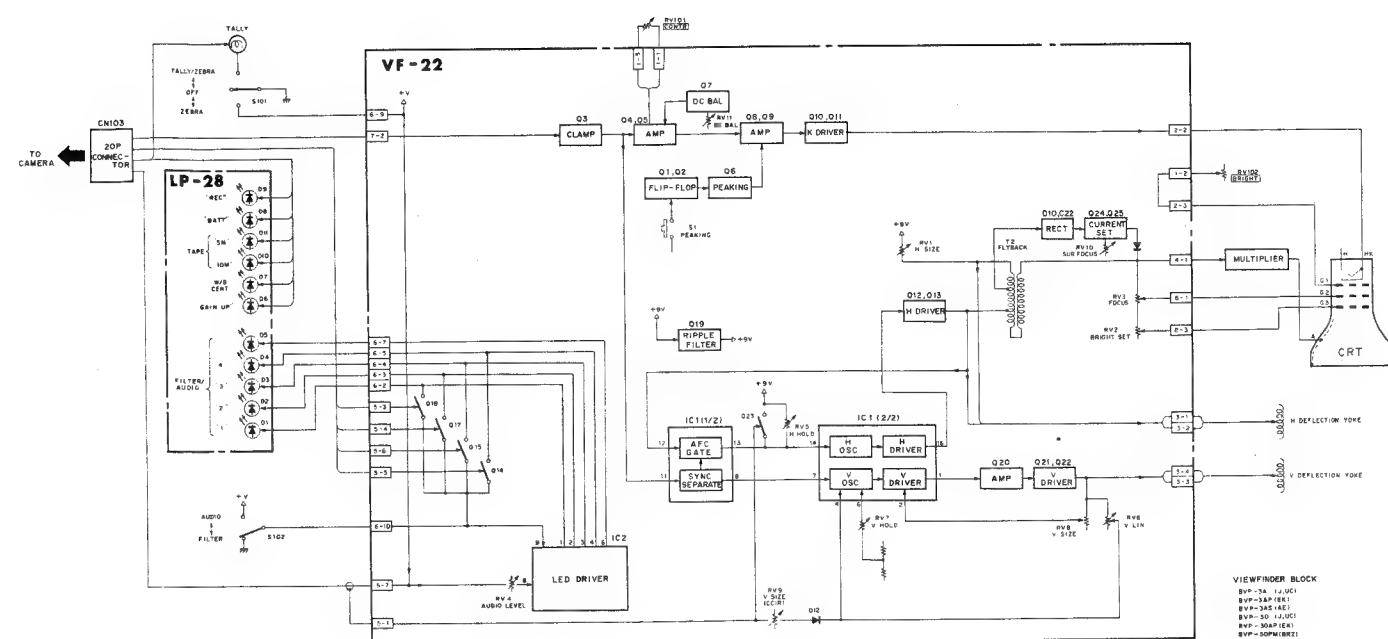


SG-63A BLOCK  
BVP-30A(IEK)  
BVP-3AP (IEK)

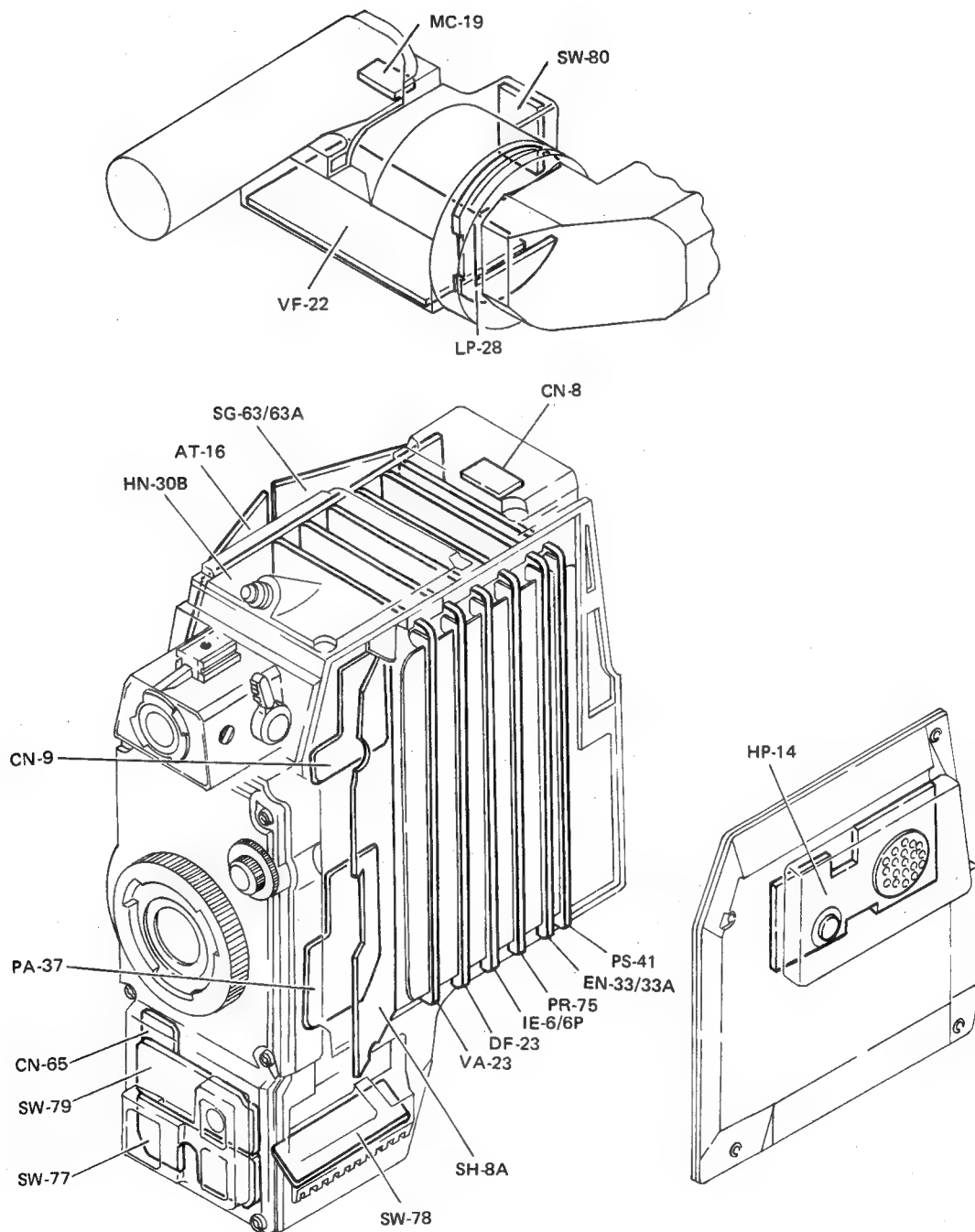
## PS-41 BOARD



## VIEWFINDER



## 5-2. MOUNTING DIAGRAM AND SCHEMATIC DIAGRAM LOCATION OF MOUNTED CIRCUIT BOARD



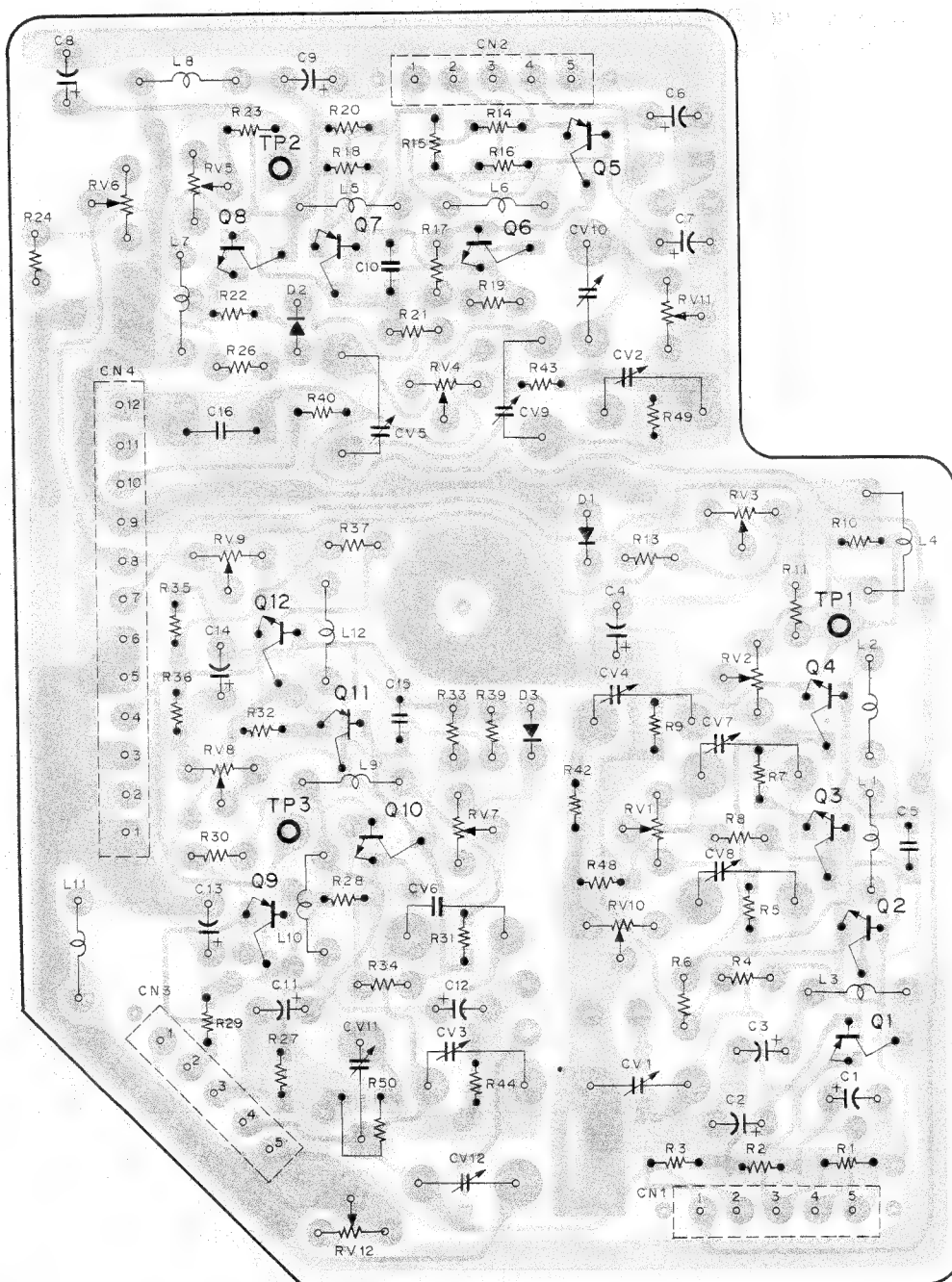
# PA-37, PP-13

Parts. No. 1-612-380-13

## PA-37 BOARD

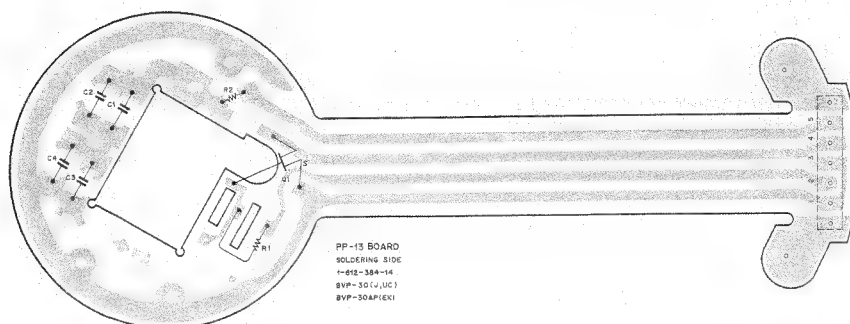
PRE AMP

— SOLDERING SIDE —



## PP-13 BOARD

— SOLDERING SIDE —



## PA-37 BOARD

SOLDERING SIDE

1-612-380-13

BVP-30 (J,UC)

BVP-30AP(EK)

BVP-30PM(BRZ)

BVP-3A (J,UC)

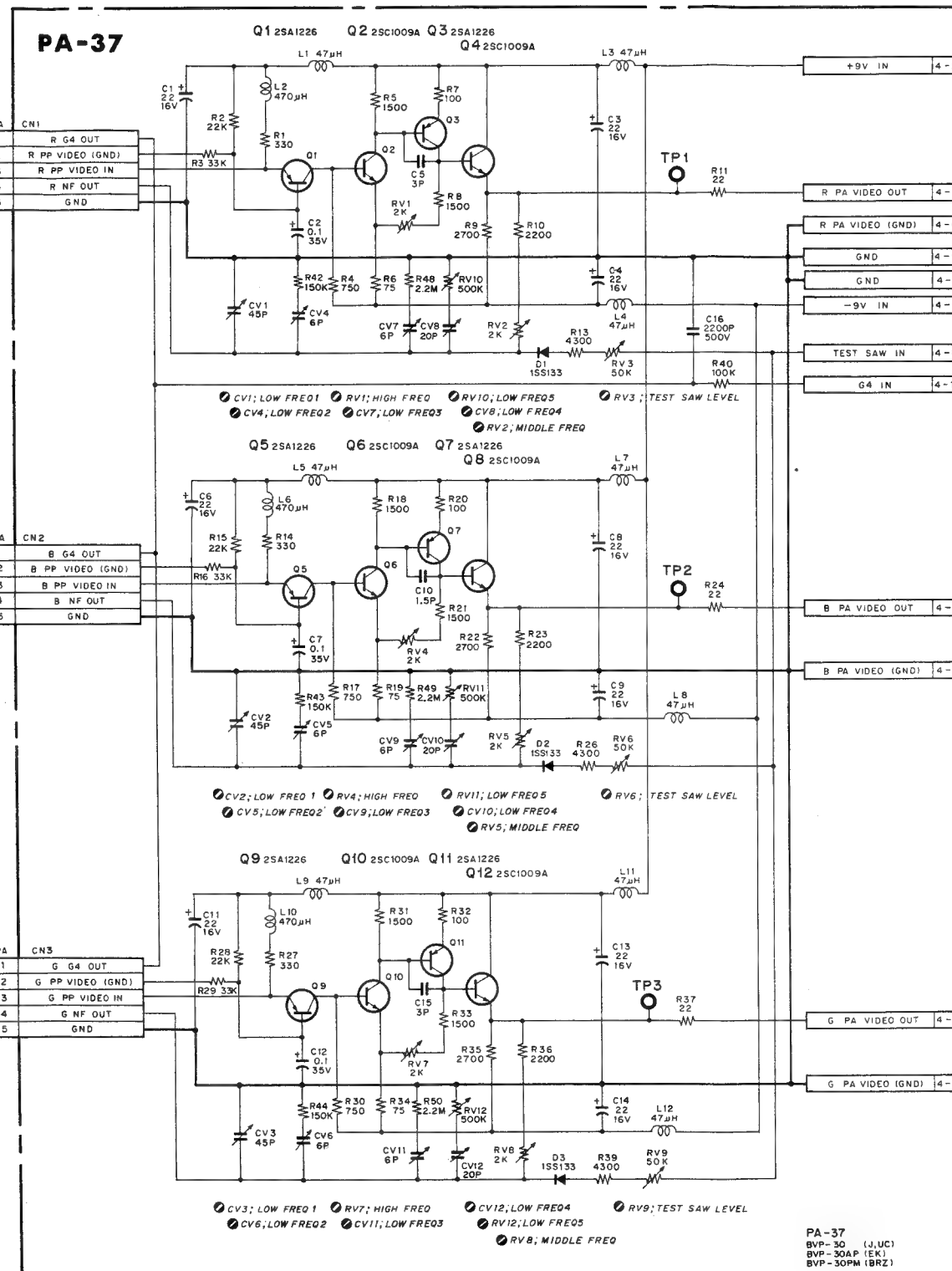
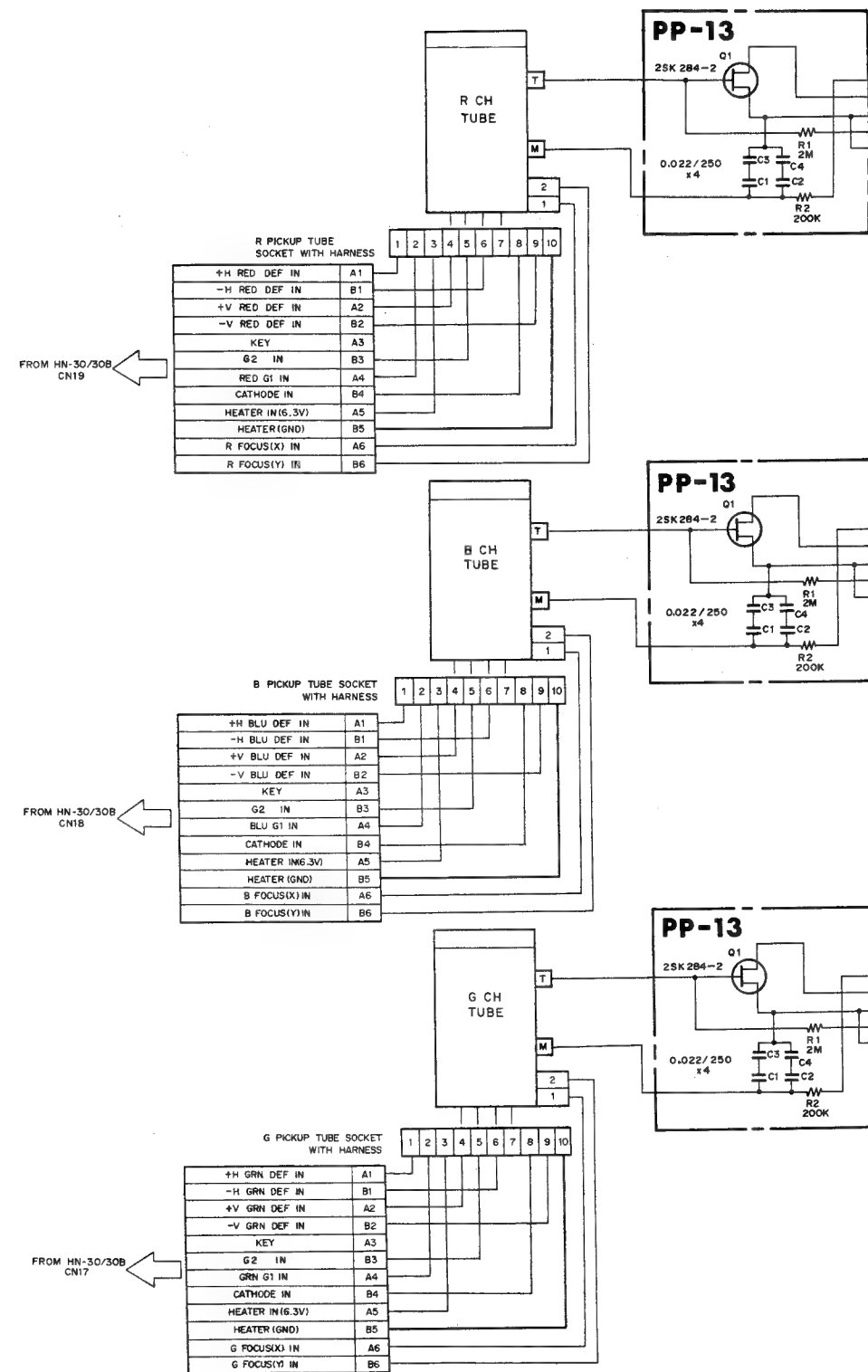
BVP-3AN(J)

BVP-3AP(EK)

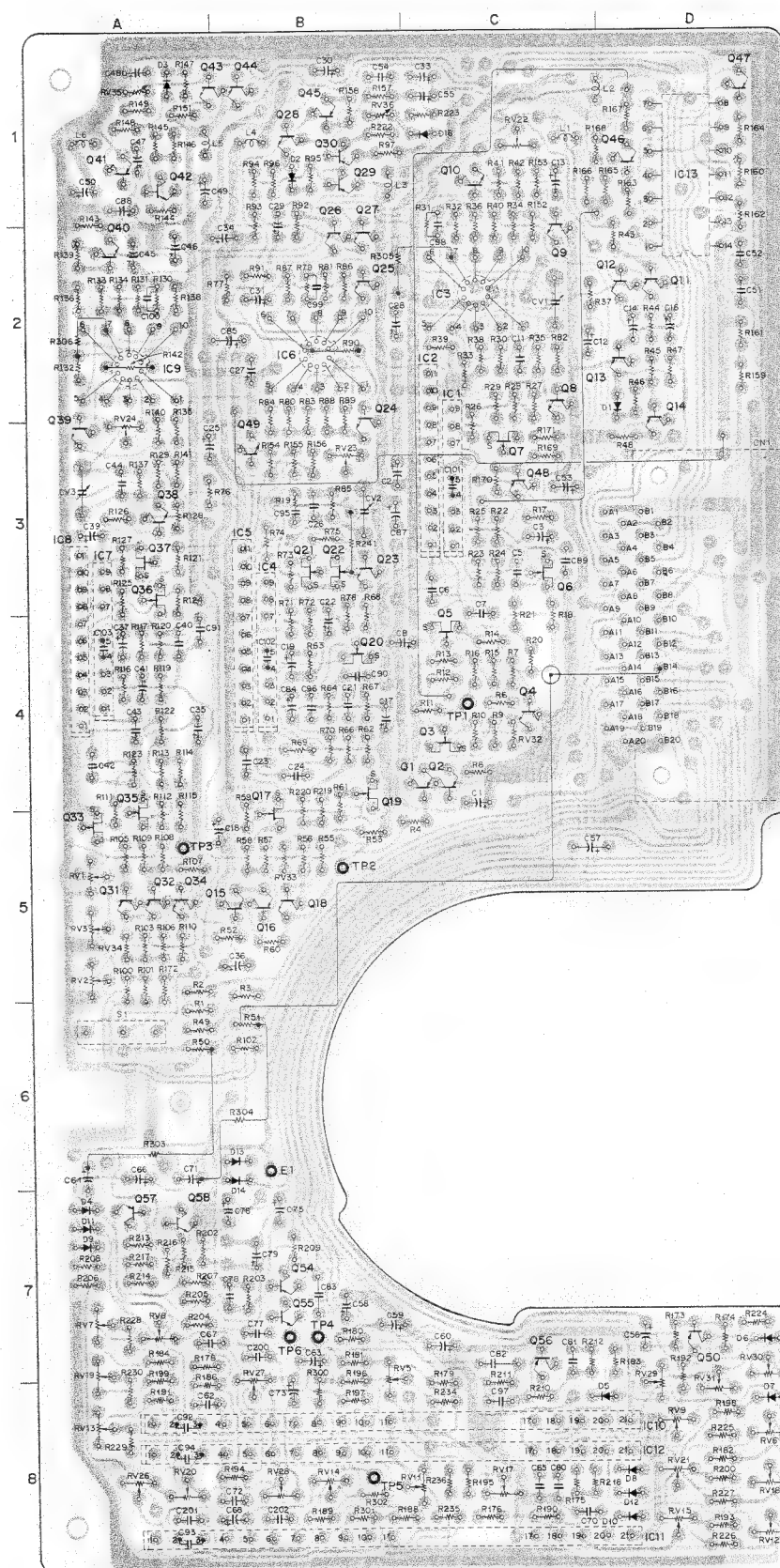
BVP-3AS(AE)

PP-13 BOARD  
SOLDERING SIDE  
1-612-380-14  
BVP-30(J,UC)  
BVP-30AP(EK)

PA-37 BOARD  
PP-13 BOARD



VA-23 BOARD  
VIDEO AMP  
ABO  
— SOLDERING SIDE —

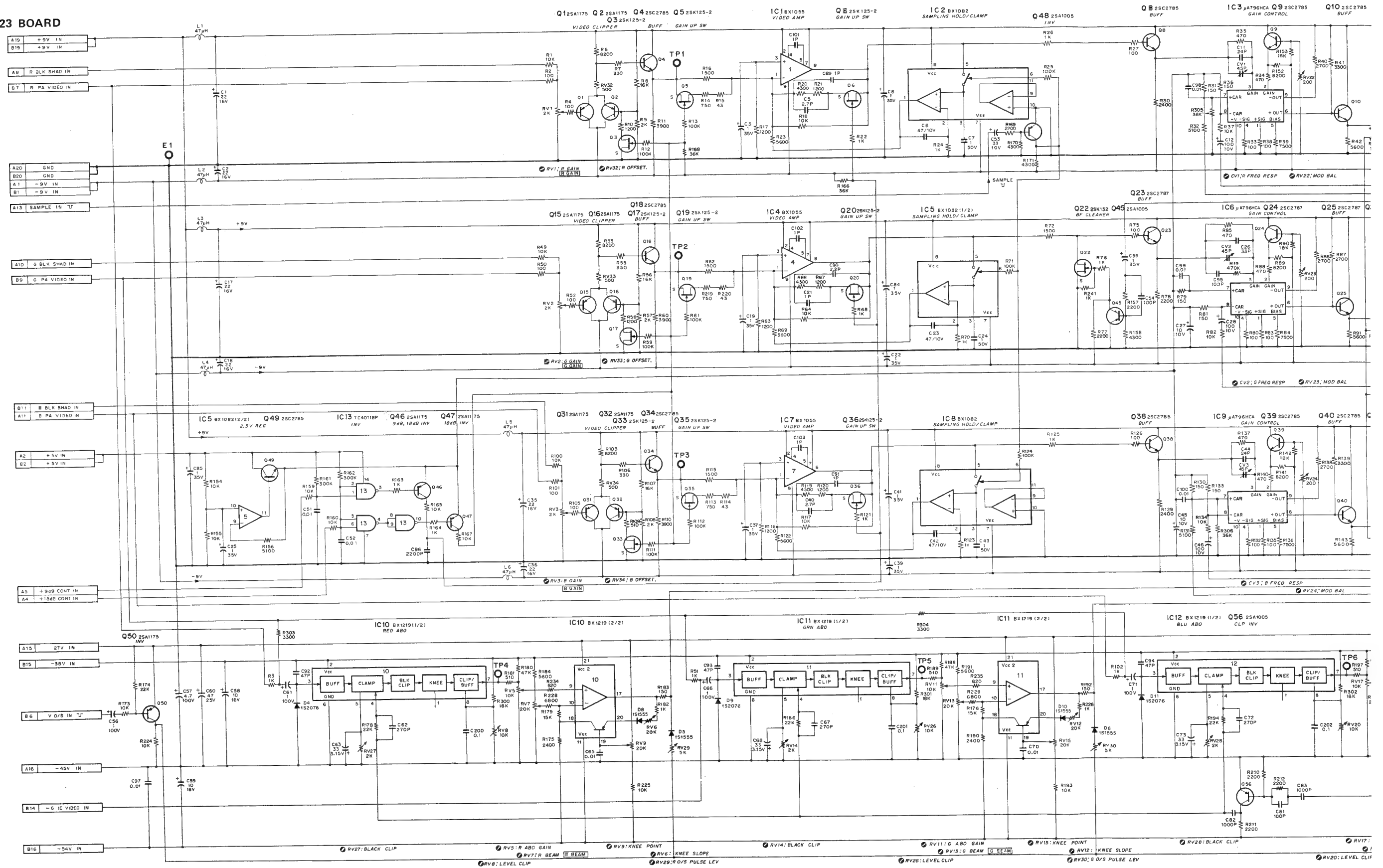


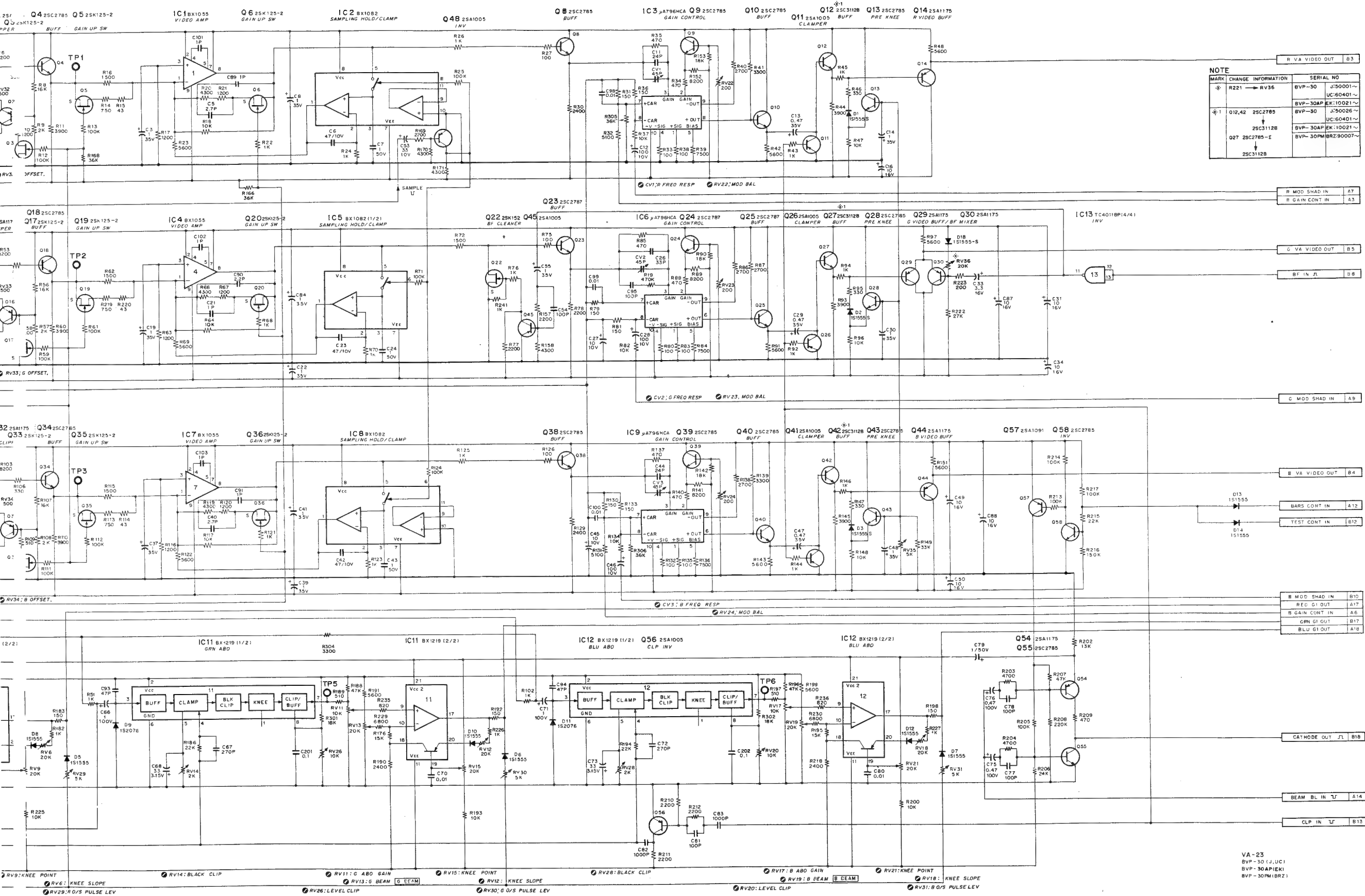
CN1 D-3	RV1 A-5
CV1 C-2	RV2 A-5
CV2 B-3	RV3 A-5
CV3 A-3	RV4 B-7
D1 D-2	RV5 A-7
D2 B-1	RV6 D-8
D3 A-1	RV7 A-7
D4 A-7	RV8 A-7
D5 D-7	RV9 A-8
D6 D-7	RV10 A-8
D7 D-6	RV11 A-8
D8 D-8	RV12 A-8
D9 A-7	RV13 A-8
D10 D-8	RV14 A-8
D11 A-7	RV15 A-8
D12 D-8	RV16 A-8
D13 B-6	RV17 A-8
D14 B-6	RV18 A-8
D18 C-1	RV19 A-8
E1 B-6	RV20 A-8
IC1 C-3	RV21 A-8
IC2 C-3	RV22 A-8
IC3 C-2	RV23 A-8
IC4 A-4	RV24 A-8
IC5 B-4	RV25 A-8
IC6 B-2	RV26 A-8
IC7 A-4	RV27 A-8
IC8 A-4	RV28 A-8
IC9 A-2	RV29 A-8
IC10 B-8	RV30 A-8
IC11 B-8	RV31 A-8
IC12 B-8	RV32 A-8
IC13 D-1	RV33 A-8
Q1 C-4	RV34 A-8
Q2 C-4	RV35 A-8
Q3 C-4	RV36 A-8
Q4 C-4	RV37 A-8
Q5 C-4	RV38 A-8
Q6 C-3	RV39 A-8
Q7 C-3	RV40 A-8
Q8 C-2	RV41 A-8
Q9 C-2	RV42 A-8
Q10 C-1	RV43 A-8
Q11 D-2	RV44 A-8
Q12 D-2	RV45 A-8
Q13 D-2	RV46 A-8
Q14 D-3	RV47 A-8
Q15 B-5	RV48 A-8
Q16 B-5	RV49 A-8
Q17 B-4	RV50 A-8
Q18 B-5	RV51 A-8
Q19 B-4	RV52 A-8
Q20 B-4	RV53 A-8
Q21 B-3	RV54 A-8
Q22 B-3	RV55 A-8
Q23 B-3	RV56 A-8
Q24 B-3	RV57 A-8
Q25 B-2	RV58 A-8
Q26 B-2	RV59 A-8
Q27 B-2	RV60 A-8
Q28 B-1	RV61 A-8
Q29 B-1	RV62 A-8
Q30 B-1	RV63 A-8
Q31 A-5	RV64 A-8
Q32 A-5	RV65 A-8
Q33 A-5	RV66 A-8
Q34 A-5	RV67 A-8
Q35 A-5	RV68 A-8
Q36 A-3	RV69 A-8
Q37 A-3	RV70 A-8
Q38 A-3	RV71 A-8
Q39 A-3	RV72 A-8
Q40 A-2	RV73 A-8
Q41 A-1	RV74 A-8
Q42 A-1	RV75 A-8
Q43 A-1	RV76 A-8
Q44 B-1	RV77 A-8
Q45 B-1	RV78 A-8
Q46 D-1	RV79 A-8
Q47 D-1	RV80 A-8
Q48 C-3	RV81 A-8
Q49 B-3	RV82 A-8
Q50 D-7	RV83 A-8
Q51 B-7	RV84 A-8
Q52 B-7	RV85 A-8
Q53 C-7	RV86 A-8
Q54 A-7	RV87 A-8
Q55 A-7	RV88 A-8
Q56 A-7	RV89 A-8
Q57 A-7	RV90 A-8
Q58 A-7	RV91 A-8

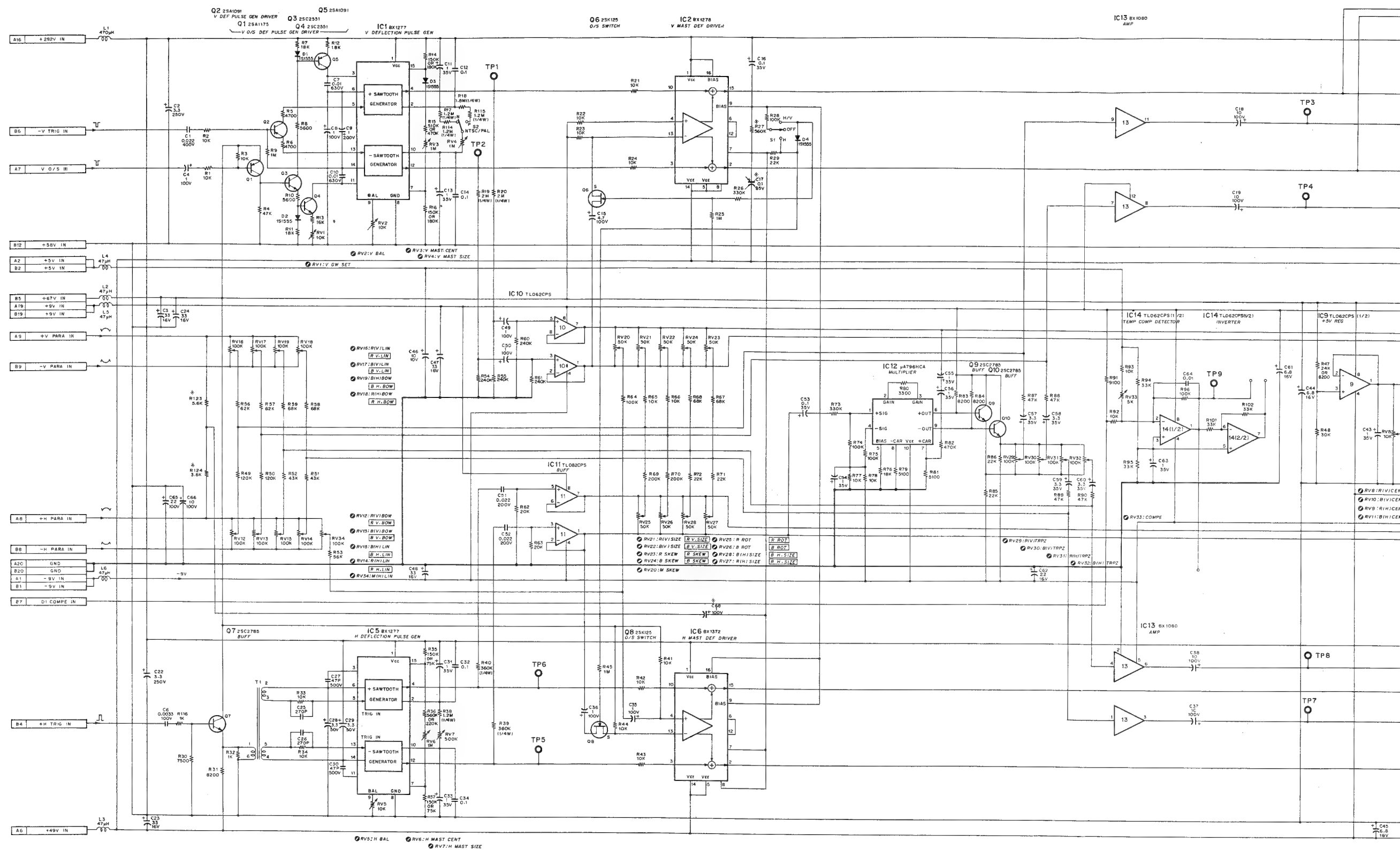
VA-23 BOARD  
SOLDERING SIDE  
1-612-383-14  
BYP-3011 UCI  
BYP-3041 EKI

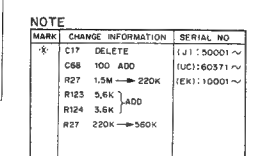


## VA-23 BOARD



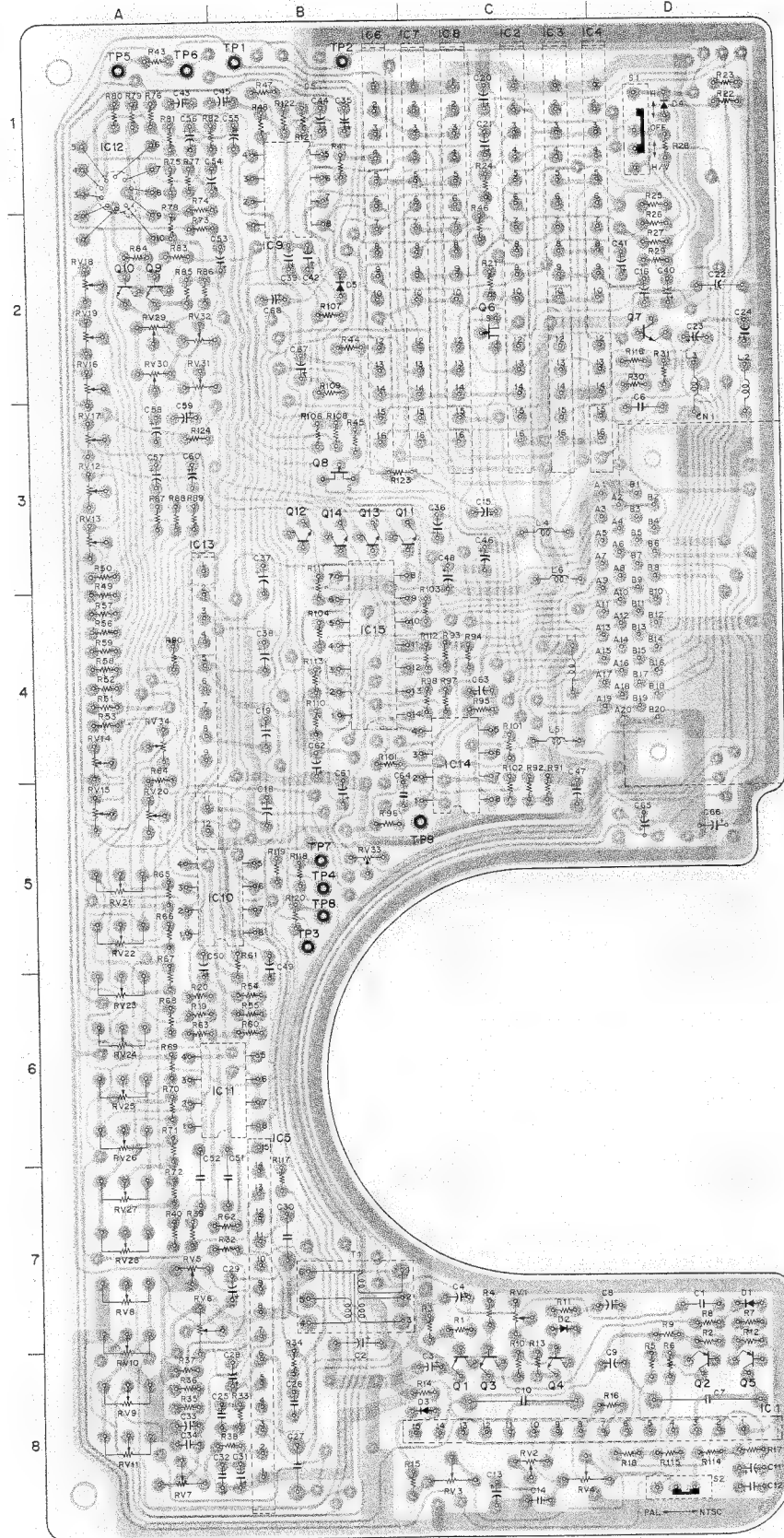


**DF-23 BOARD**  
 DEFLECTION




PARTS NO. 1-612-382-14

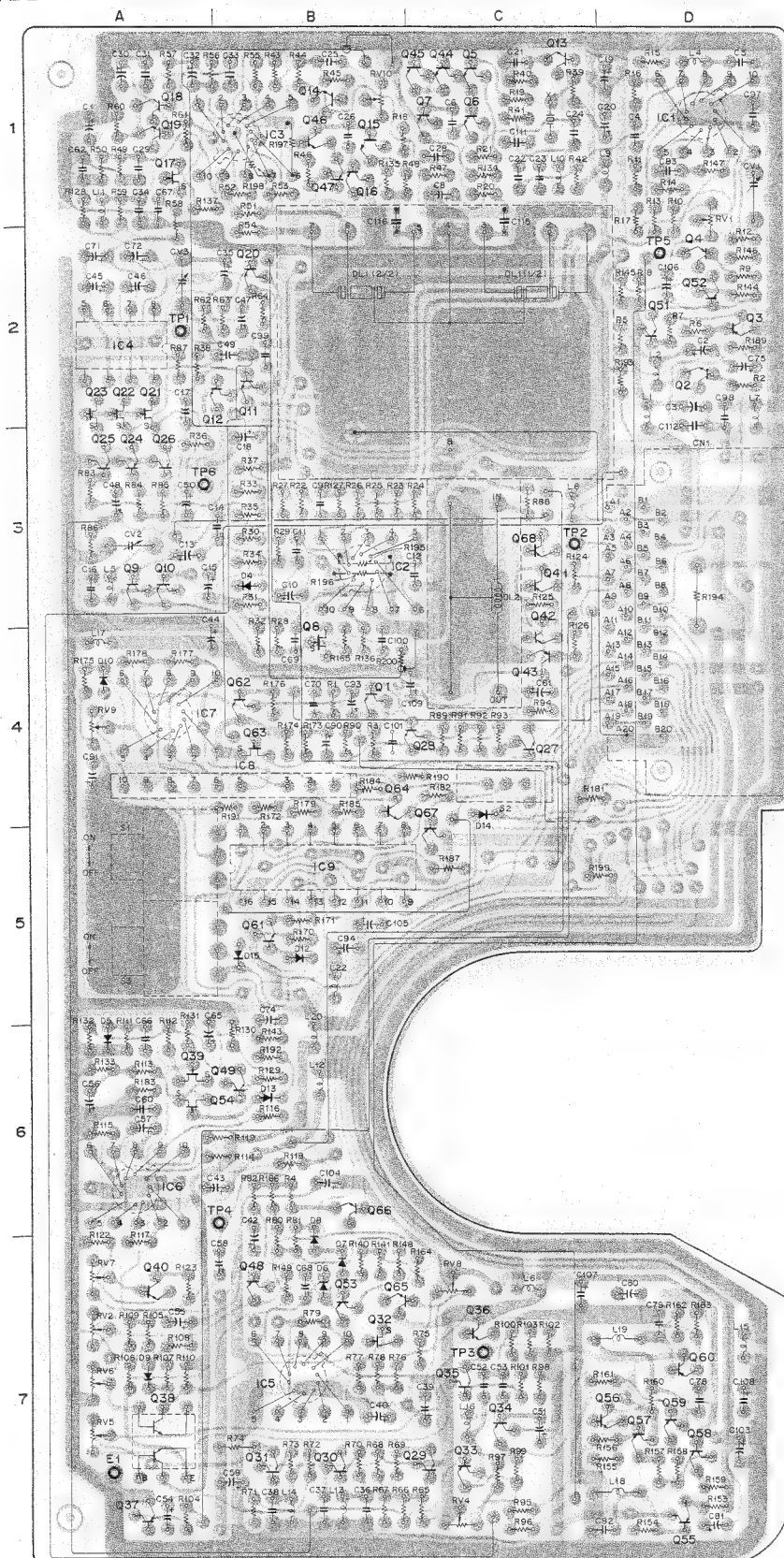
DF-23 BOARD  
- SOLDERING SIDE -



CN1	B-4
D1	D-7
D2	C-7
D3	D-8
D4	D-1
D5	B-2
IC1	C-8
IC2	C-2
IC3	C-2
IC4	C-2
IC5	B-7
IC6	B-2
IC7	C-2
IC8	B-1
IC9	B-1
IC10	A-5
IC11	A-6
IC12	A-1
IC13	A-4
IC14	C-4
IC15	B-4
Q1	C-8
Q2	D-8
Q3	C-8
Q4	C-8
Q5	D-8
Q6	C-2
Q7	C-2
Q8	B-3
Q9	A-2
Q10	A-2
Q11	C-3
Q12	B-3
Q13	B-3
Q14	B-3
RV1	C-7
RV2	C-8
RV3	C-8
RV4	C-8
RV5	A-7
RV6	A-7
RV7	A-8
RV8	A-7
RV9	A-8
RV10	A-7
RV11	A-8
RV12	A-3
RV13	A-3
RV14	A-4
RV15	A-5
RV16	A-2
RV17	A-3
RV18	A-2
RV19	A-2
RV20	A-5
RV21	A-5
RV22	A-5
RV23	A-6
RV24	A-6
RV25	A-6
RV26	A-6
RV27	A-7
RV28	A-7
RV29	A-2
RV30	A-2
RV31	A-2
RV32	A-2
RV33	B-5
RV34	A-4
S1	D-1
S2	D-8
TP1	B-1
TP2	B-1
TP3	B-5
TP4	B-5
TP5	A-1
TP6	A-1
TP7	B-5
TP8	B-5
TP9	C-5

IE-6 BOARD  
- SOLDERING SIDE -

PARTS NO. 1-608-886-16



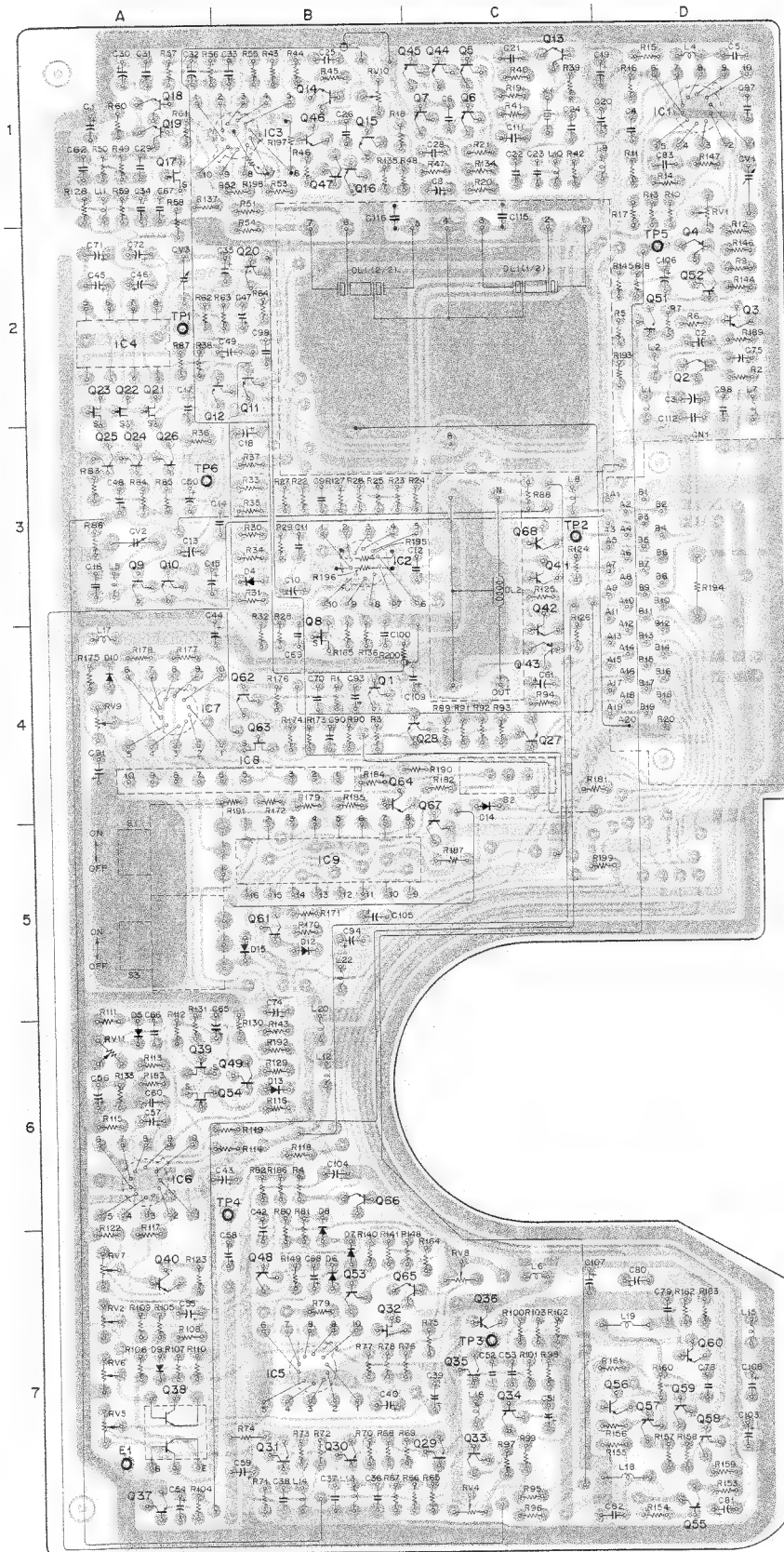
- CN1 D-3
- CV1 D-1
- CV2 A-3
- CV3 A-2
- D4 B-3
- D6 A-6
- D8 B-7
- D7 B-7
- D8 B-7
- D9 A-7
- D10 A-4
- D12 B-6
- D13 B-6
- D14 C-5
- D15 B-5
- DL1 C-2
- DL2 C-3
- E1 A-7
- IC1 D-1
- IC2 B-3
- IC3 B-1
- IC4 A-2
- IC5 B-7
- IC8 A-6
- IC7 A-4
- IC8 B-4
- IC9 B-6
- Q1 B-4
- Q2 D-2
- Q3 D-2
- Q4 D-2
- Q5 C-1
- Q6 C-1
- Q7 C-1
- Q8 B-4
- Q9 A-3
- Q10 A-3
- Q11 B-2
- Q12 B-2
- Q13 C-1
- Q14 B-1
- Q15 B-1
- Q16 B-1
- Q17 A-1
- Q18 A-1
- Q19 A-1
- Q20 B-2
- Q21 A-2
- Q22 A-2
- Q23 A-2
- Q24 A-3
- Q25 A-3
- Q26 C-3
- Q27 C-4
- Q28 C-4
- Q29 C-7
- Q30 B-7
- Q31 B-7
- Q32 B-7
- Q33 C-7
- Q34 C-7
- Q35 C-7
- Q36 C-7
- Q37 A-7
- Q38 A-7
- Q39 A-6
- Q40 A-7
- Q41 C-3
- Q42 C-4
- Q43 C-4
- Q44 C-1
- Q45 C-1
- Q46 B-1
- Q47 B-1
- Q48 B-7
- Q49 B-6
- Q51 D-2
- Q52 C-7
- Q53 B-7
- Q54 A-6
- Q55 D-7
- Q56 D-7
- Q57 D-7
- Q58 D-7
- Q59 D-7
- Q60 D-7
- Q61 B-5
- Q62 B-4
- Q63 B-4
- Q64 B-4
- Q65 B-7
- Q66 B-6
- Q67 C-6
- Q68 C-3
- RV1 D-1
- RV2 A-7
- RV4 C-7
- RV5 A-7
- RV6 A-7
- RV7 A-7
- RV8 C-7
- RV9 A-4
- S1 A-5
- S2 C-4
- S3 A-5
- TP1 A-2
- TP2 C-3
- TP3 C-7
- TP4 A-6
- TP5 D-2
- TP6 A-3
- X1 C-1

IE-6/6P BOARD  
1-608-886-16  
BVP - 30 (J,UCI)  
BVP - 30A (EX1)  
BVP - 30PM (B2)  
BVP - 3A (J,UCI)  
BVP - 3A (J)  
BVP - 3AP (EX1)  
BVP - 3AS (AE)



IE-6/6P

IE-6/6P BOARD  
— SOLDERING SIDE —



CN1 D-3

CV1 D-1  
CV2 A-3  
CV3 A-2

D4 B-3  
D5 A-6  
D6 B-7  
D7 B-7  
D8 B-7  
D9 A-7  
D10 A-4  
D12 B-5  
D13 B-6  
D14 C-5  
D15 B-5

DL1 C-2  
DL2 C-3

F1 A-7

IC1 D-1  
IC2 B-3  
IC3 B-1  
IC4 A-2  
IC5 B-7  
IC6 A-6  
IC7 A-4  
IC8 B-4  
IC9 B-5

Q1 B-4  
Q2 D-2  
Q3 D-2  
Q4 D-2  
Q5 C-1  
Q6 C-1  
Q7 C-1  
Q8 B-4  
Q9 A-3  
Q10 A-3  
Q11 B-2  
Q12 B-2  
Q13 C-1  
Q14 B-1  
Q15 B-1  
Q16 B-1  
Q17 A-1  
Q18 A-1  
Q19 A-1  
Q20 B-2  
Q21 A-2  
Q22 A-2  
Q23 A-2  
Q24 A-3  
Q25 A-3  
Q26 A-3  
Q27 C-4  
Q28 C-4  
Q29 C-7  
Q30 B-7  
Q31 B-7  
Q32 B-7  
Q33 C-7  
Q34 C-7  
Q35 C-7  
Q36 C-7  
Q37 A-7  
Q38 A-7  
Q39 A-6  
Q40 A-7  
Q41 C-3  
Q42 C-4  
Q43 C-4  
Q44 C-1  
Q45 C-1  
Q46 B-1  
Q47 B-1  
Q48 B-7  
Q49 B-6  
Q50 D-2  
Q51 D-2  
Q52 B-7  
Q53 A-6  
Q54 A-6  
Q55 D-7  
Q56 D-7  
Q57 D-7  
Q58 D-7  
Q59 D-7  
Q60 D-7  
Q61 B-5  
Q62 B-4  
Q63 B-4  
Q64 B-4  
Q65 B-7  
Q66 B-6  
Q67 C-5  
Q68 C-3

RV1 D-1  
RV2 A-7  
RV3 A-7  
RV4 C-7  
RV5 A-7  
RV6 A-7  
RV7 A-7  
RV8 C-7  
RV9 A-4  
RV10 B-1  
RV11 A-6

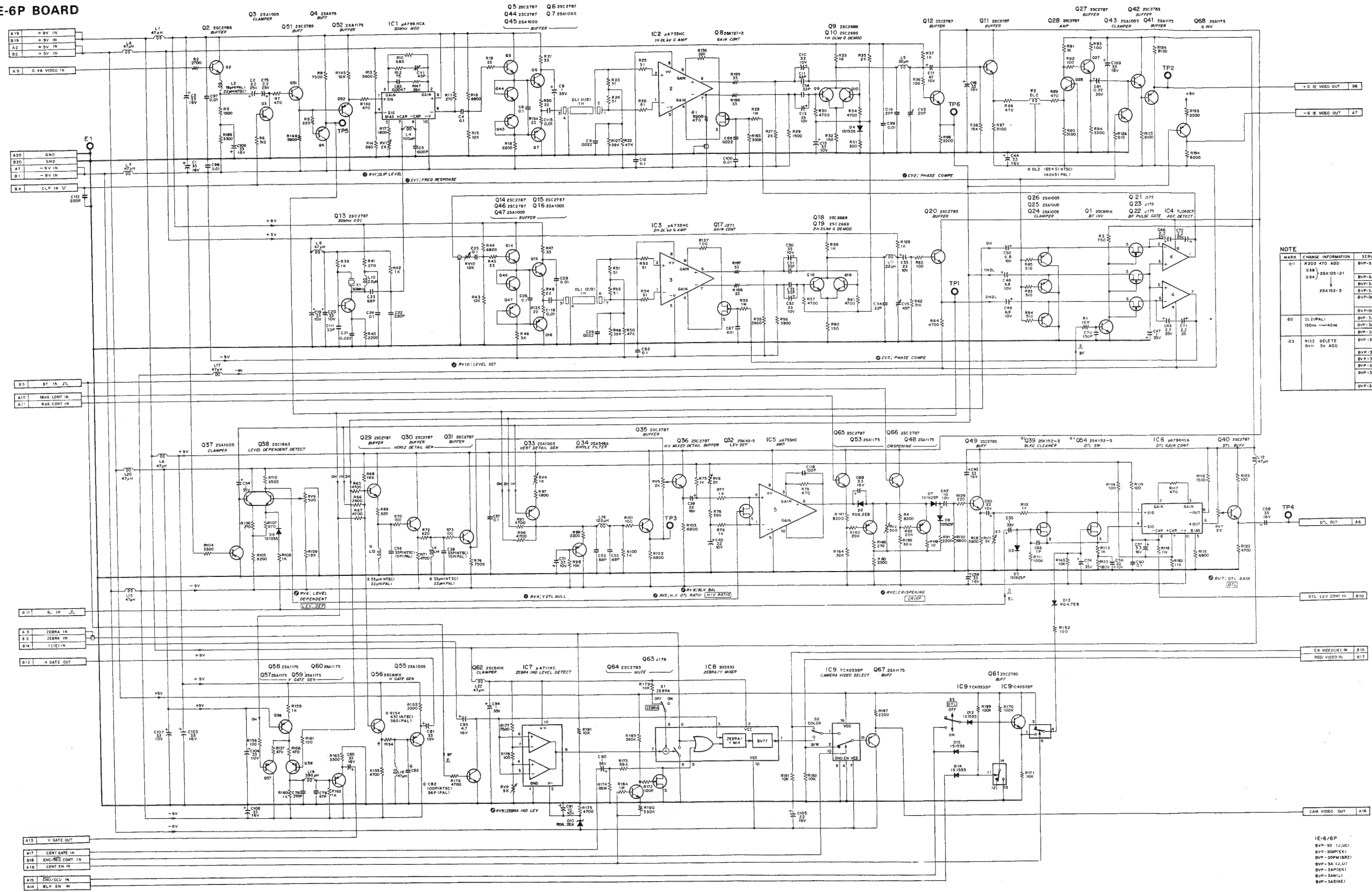
S1 A-5  
S2 C-4  
S3 A-6

TP1 A-2  
TP2 C-3  
TP3 C-7  
TP4 A-6  
TP5 D-2  
TP6 A-3

X1 C-1

IE-6/6P BOARD  
1-608-866-17  
BVP-30 (AUCI)  
BVP-30AP (EX)  
BVP-30AP (BET)  
BVP-34 (AUCI)  
BVP-34N (AUCI)  
BVP-34P (EX)  
BVP-34S (AUCI)

# IE-6P BOARD

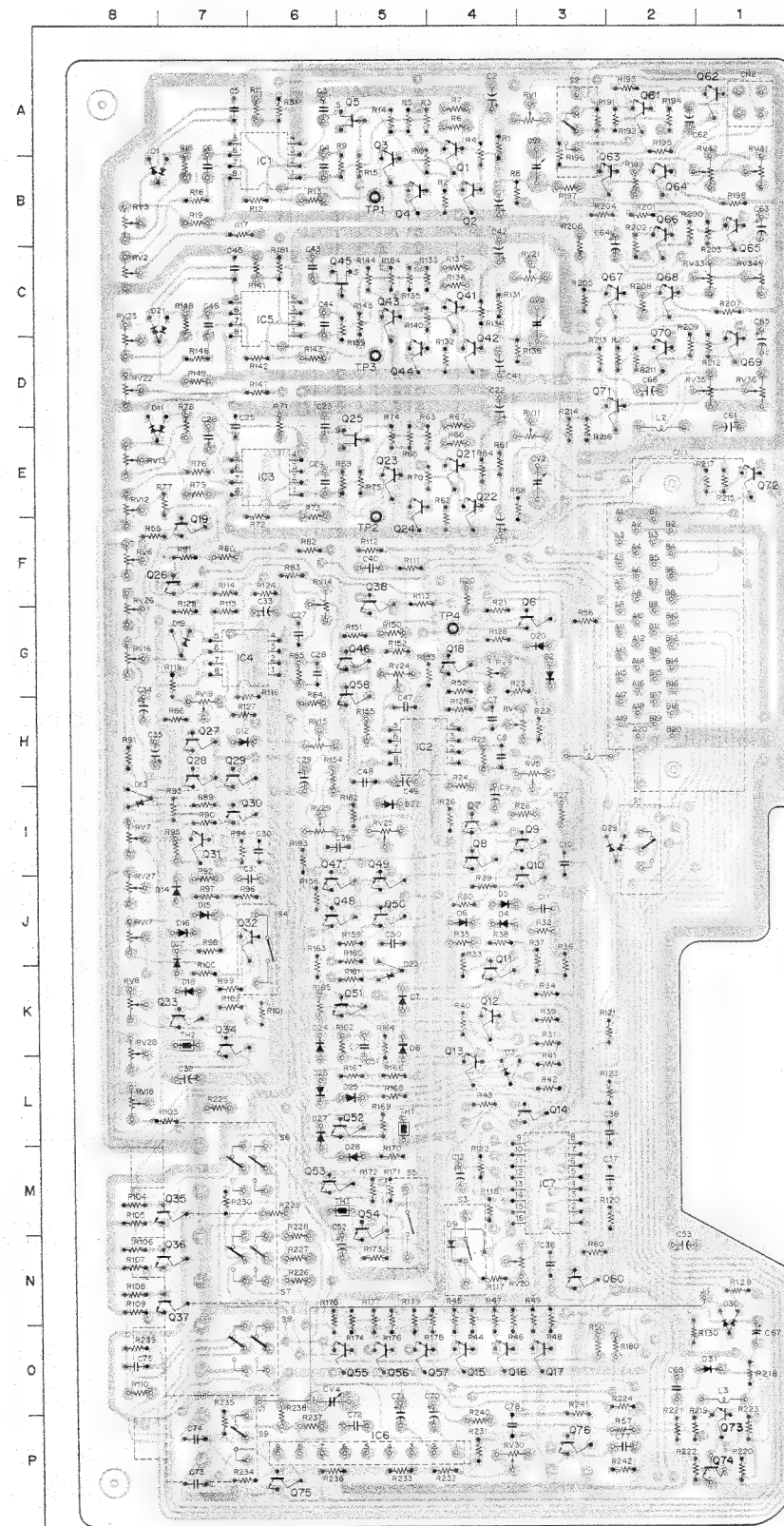


NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
01	R200 470 ADD	BVP-3A J14001~
02	Q88 J14001~	BVP-3A J14001~
03	Q89 J14001~	BVP-3A J14001~
04	Q90 J14001~	BVP-3A J14001~
05	Q91 J14001~	BVP-3A J14001~
06	Q92 J14001~	BVP-3A J14001~
07	Q93 J14001~	BVP-3A J14001~
08	Q94 J14001~	BVP-3A J14001~
09	Q95 J14001~	BVP-3A J14001~
10	Q96 J14001~	BVP-3A J14001~
11	Q97 J14001~	BVP-3A J14001~
12	Q98 J14001~	BVP-3A J14001~
13	Q99 J14001~	BVP-3A J14001~
14	Q100 J14001~	BVP-3A J14001~



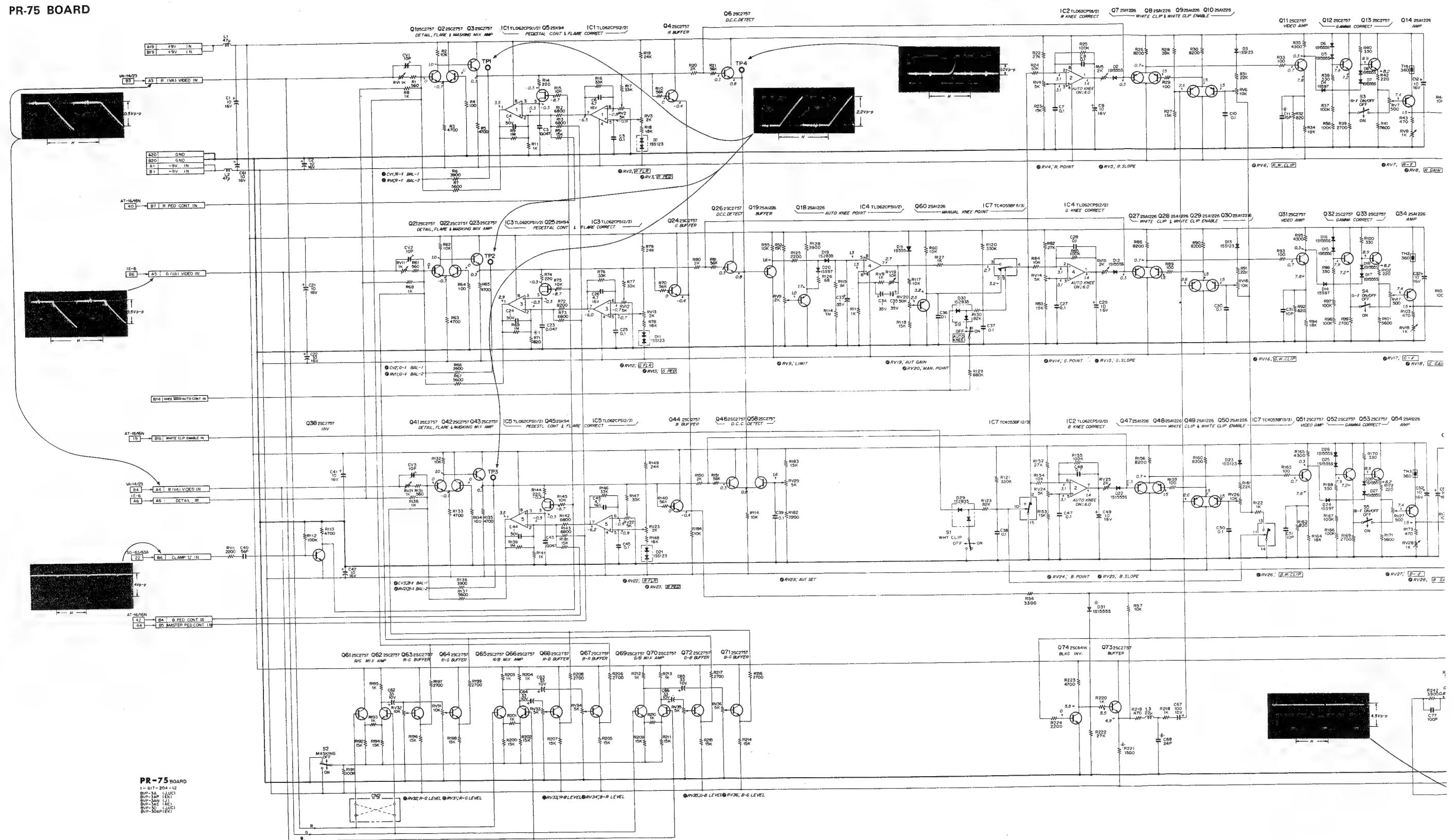
PR-75 BOARD  
— SOLDERING SIDE —

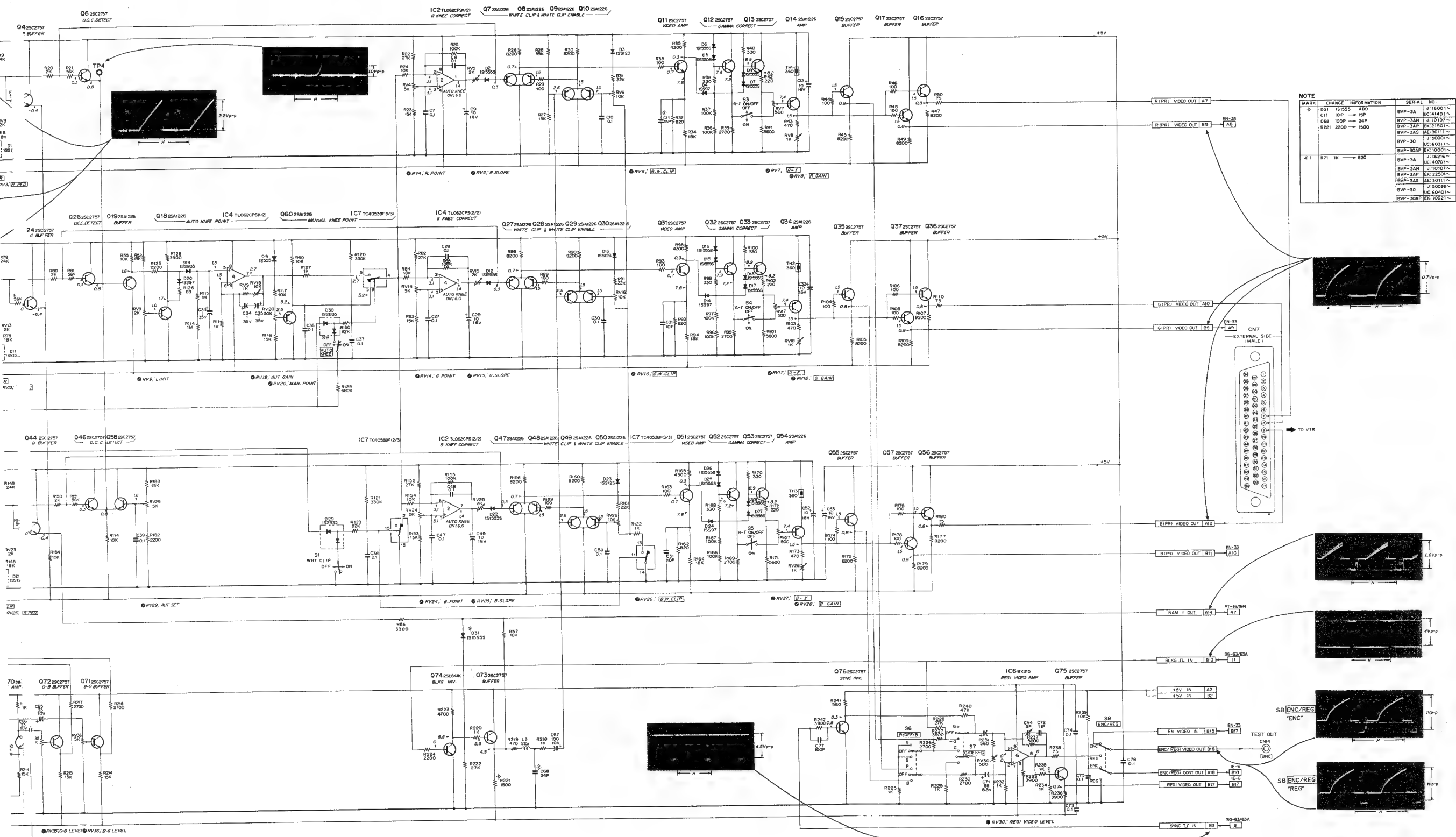


CN1	G-2	RV1	A-3
CN2	A-1	RV2	C-3
CV1	B-3	RV3	B-8
CV2	E-3	RV4	H-3
CV3	C-3	RV5	H-3
CV4	O-6	RV6	F-8
D1	B-8	RV7	I-8
D2	G-3	RV8	K-8
D3	L-4	RV9	G-4
D4	J-4	RV10	E-3
D5	J-4	RV11	E-3
D6	J-4	RV12	E-8
D7	K-5	RV13	E-8
D8	K-5	RV14	F-8
D9	N-4	RV15	H-6
D10	D-8	RV16	G-8
D11	D-8	RV17	J-8
D12	H-7	RV18	L-8
D13	I-8	RV19	H-7
D14	J-7	RV20	N-4
D15	J-7	RV21	C-3
D16	J-7	RV22	D-8
D17	J-7	RV23	D-8
D18	K-7	RV24	D-5
D19	G-7	RV25	I-5
D20	G-3	RV26	G-8
D21	C-8	RV27	J-8
D22	I-5	RV28	K-8
D23	K-5	RV29	I-8
D24	K-6	RV30	P-4
D25	L-5	RV31	B-1
D26	L-6	RV32	B-1
D27	L-6	RV33	C-1
D28	M-5	RV34	C-1
D29	I-2	RV35	D-1
D30	O-1	RV36	D-1
D31	K-2	S1	I-2
IC1	B-6	S2	A-3
IC2	H-4	S3	N-4
IC3	E-6	S4	J-8
IC4	O-7	S5	M-5
IC5	C-6	S6	M-7
IC6	P-5	S7	N-7
IC7	M-5	S8	O-7
Q1	A-4	S9	P-7
Q2	B-4	TH1	L-5
Q3	B-5	TH2	K-7
Q4	B-5	TH3	M-6
Q5	A-5	TP1	B-5
Q6	G-3	TP2	E-5
Q7	I-4	TP3	D-5
Q8	I-4	TP4	G-4
Q9	I-3		
Q10	J-3		
Q11	K-4		
Q12	K-4		
Q13	L-4		
Q14	L-3		
Q15	O-4		
Q16	O-4		
Q17	O-3		
Q18	G-4		
Q19	F-7		
Q20	E-4		
Q21	E-4		
Q22	E-4		
Q23	E-5		
Q24	E-5		
Q25	E-5		
Q26	F-7		
Q27	H-7		
Q28	H-7		
Q29	H-7		
Q30	I-7		
Q31	I-7		
Q32	J-7		
Q33	K-7		
Q34	K-7		
Q35	M-8		
Q36	N-8		
Q37	N-8		
Q38	F-5		
Q41	C-4		
Q42	D-4		
Q43	C-5		
Q44	D-5		
Q45	C-5		
Q46	G-5		
Q47	J-6		
Q48	J-6		
Q49	J-5		
Q50	J-5		
Q51	K-6		
Q52	L-6		
Q53	M-6		
Q54	M-5		
Q55	O-6		
Q56	O-5		
Q57	O-5		
Q58	G-5		
Q60	N-3		
Q61	A-2		
Q62	A-1		
Q63	B-2		
Q64	B-2		
Q65	B-1		
Q66	B-2		
Q67	C-2		
Q68	C-2		
Q69	D-1		
Q70	D-2		
Q71	D-2		
Q72	E-1		
Q73	P-1		
Q74	P-1		
Q75	P-6		
Q76	P-3		

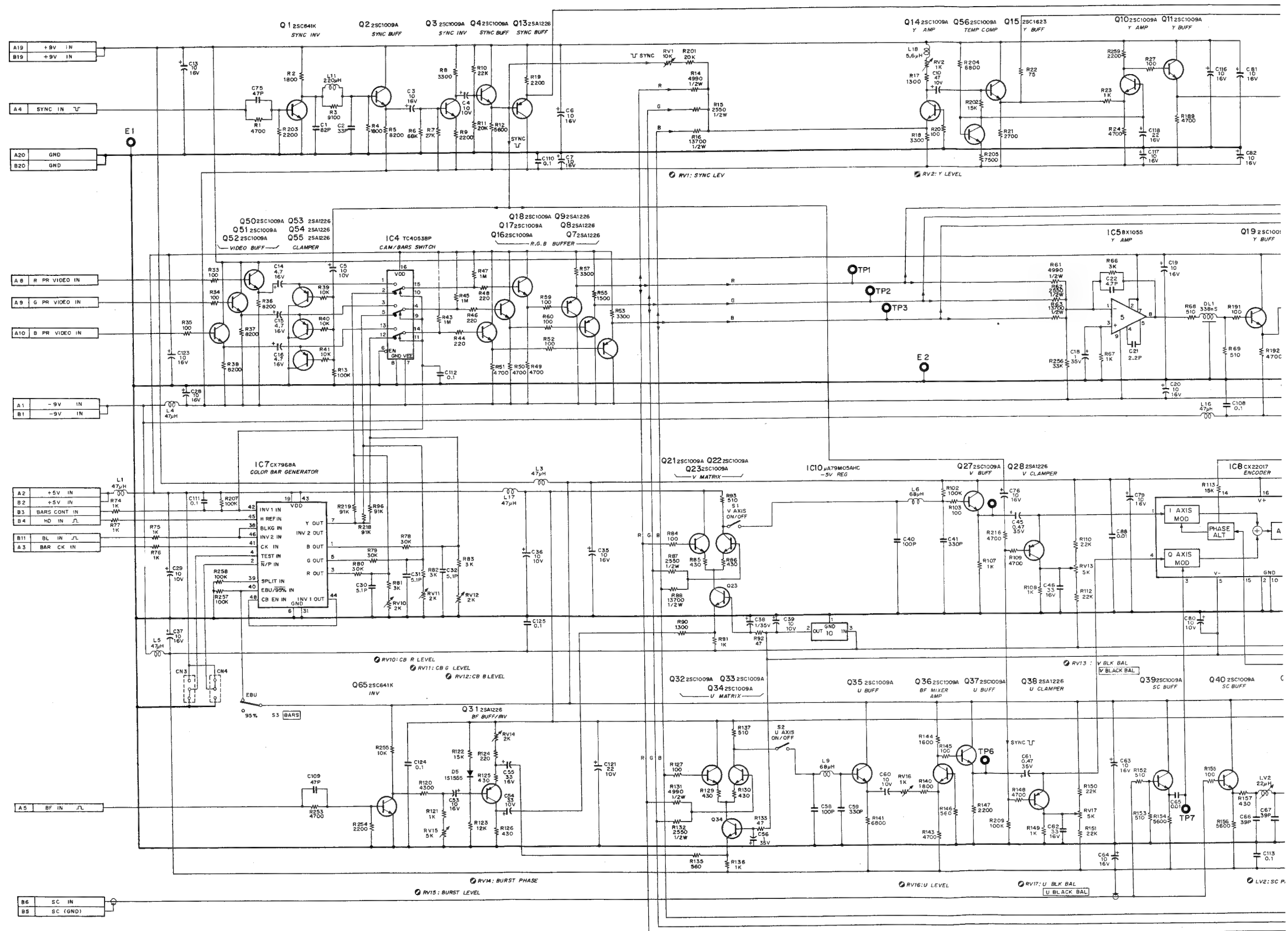
— SOLDERING SIDE —  
PR-75 BOARD  
14617-204-12, 13  
BVP-3A (LUC)  
BVP-3A (LUC)  
BVP-3A (LUC)  
BVP-3A (LUC)  
BVP-3A (LUC)

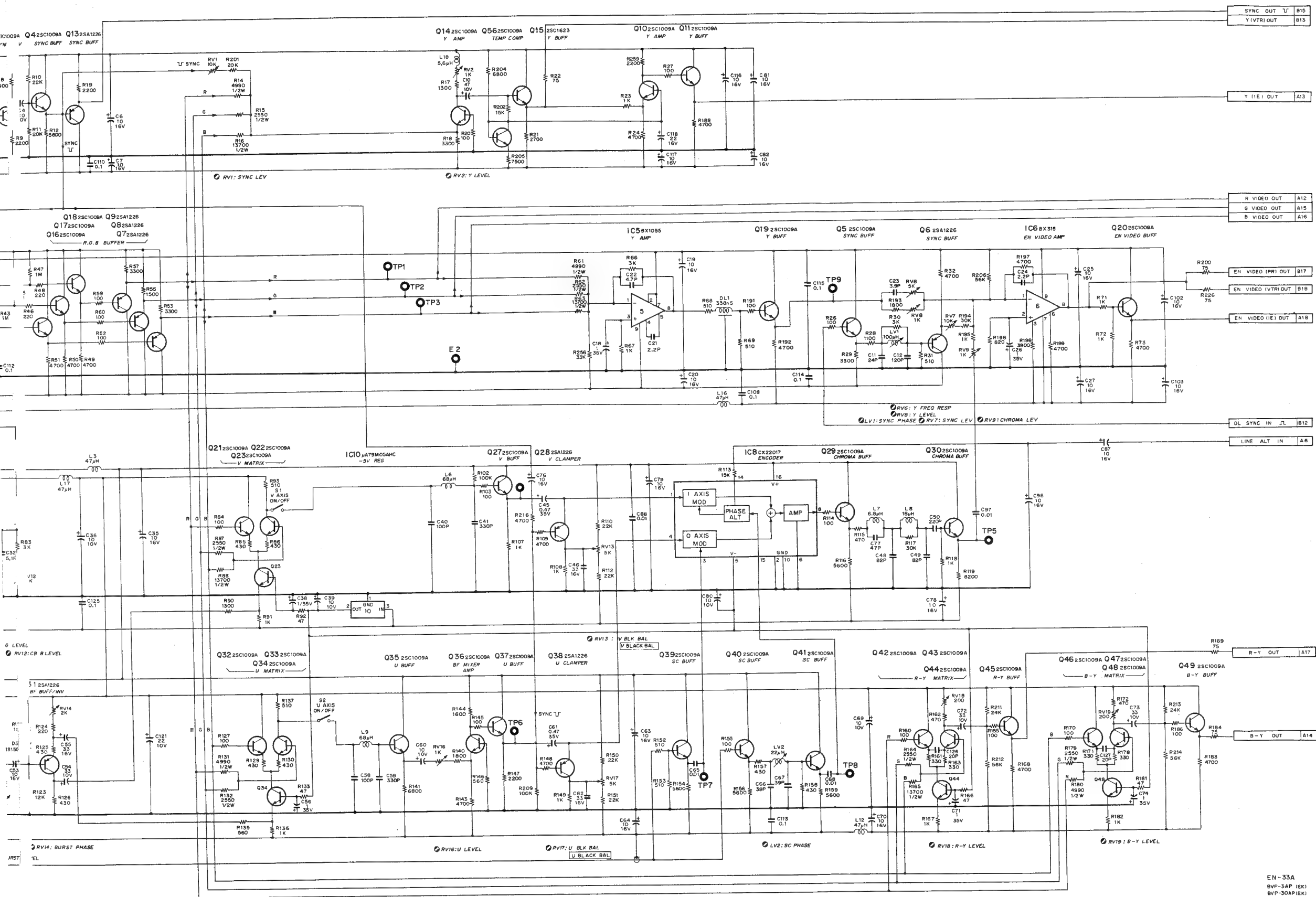
## PR-75 BOARD





EN-33A BOARD  
ENCODER  
COLOR BAR GEN



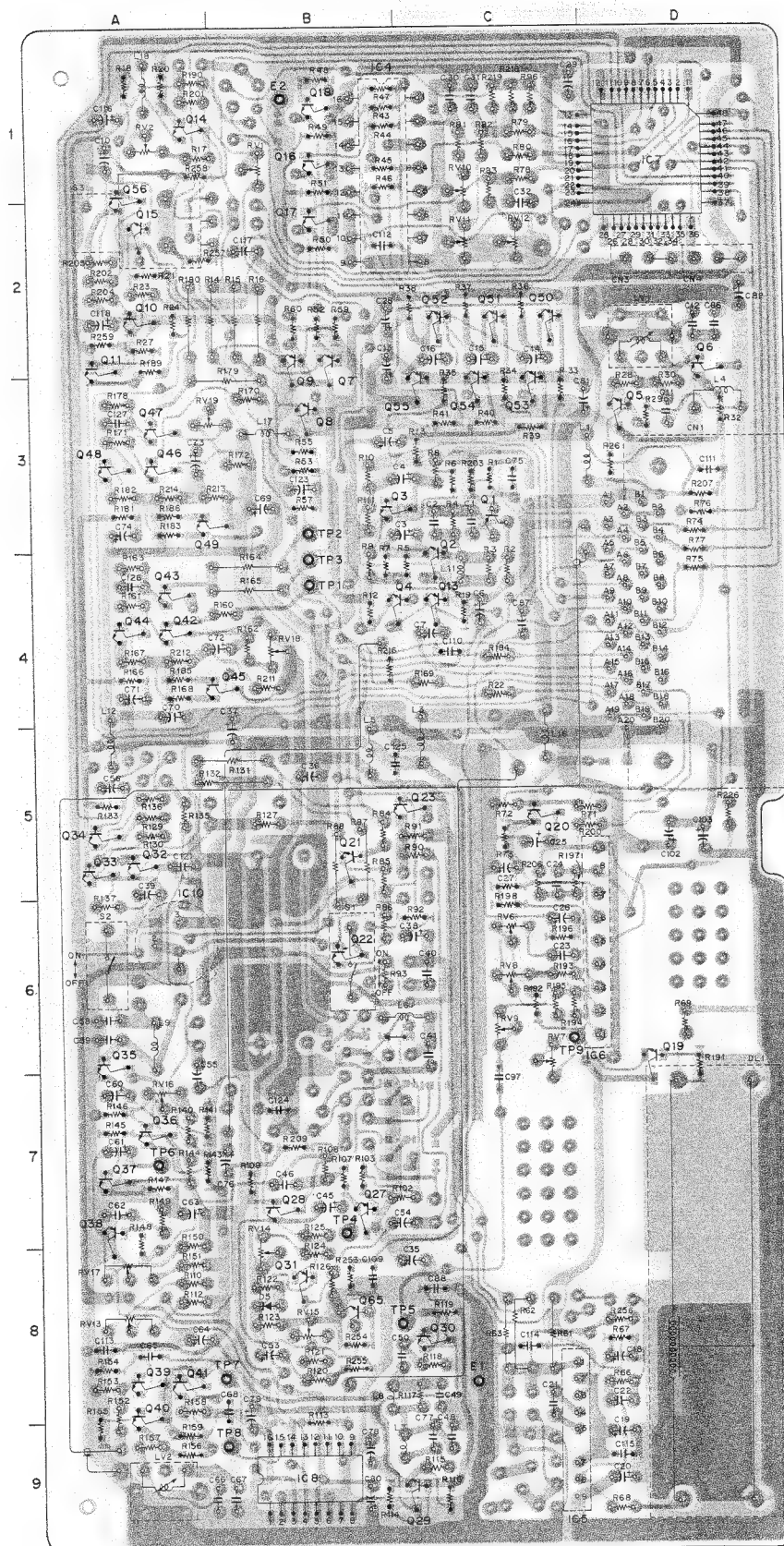


EN-33A  
BVP-3AP (EK)  
BVP-30AP (EK)



EN-33A BOARD  
— SOLDERING SIDE —

Parts. No. 1-612-776-22



CN1 D-3  
CN3 D-2  
CN4 D-2  
D5 B-8  
DL1 D-8  
E1 C-8  
E2 B-1  
IC4 B-1  
IC5 C-9  
IC6 D-6  
IC7 D-1  
IC8 B-9  
IC10 A-6  
LV1 D-2  
LV2 A-9

Q1 C-3  
Q2 C-4  
Q3 B-5  
Q4 B-4  
Q5 D-3  
Q6 D-2  
Q7 B-1  
Q8 B-3  
Q9 B-2  
Q10 A-2  
Q11 A-2  
Q13 C-4  
Q14 A-1  
Q15 A-2  
Q16 B-1  
Q17 B-2  
Q18 B-1  
Q19 A-6  
Q20 C-5  
Q21 B-5  
Q22 B-6  
Q23 B-5  
Q27 B-7  
Q28 B-7  
Q29 C-9  
Q30 C-8  
Q31 B-8  
Q32 A-5  
Q33 A-4  
Q34 A-5  
Q35 A-6  
Q38 A-7  
Q37 A-7  
Q38 A-7  
Q40 A-8  
Q41 A-8  
Q42 A-4  
Q43 A-4  
Q44 A-4  
Q45 A-4  
Q46 A-3  
Q47 A-3  
Q48 A-3  
Q49 A-3  
Q50 C-2  
Q51 C-2  
Q52 C-2  
Q53 C-3  
Q54 C-3  
Q55 C-3  
Q56 A-1  
Q65 B-8

RV1 B-1  
RV2 A-1  
RV6 C-6  
RV7 C-6  
RV8 C-6  
RV9 C-6  
RV10 C-1  
RV11 C-2  
RV12 C-2  
RV13 A-8  
RV14 B-8  
RV15 B-8  
RV16 A-7  
RV17 A-8  
RV18 B-4  
RV19 A-3

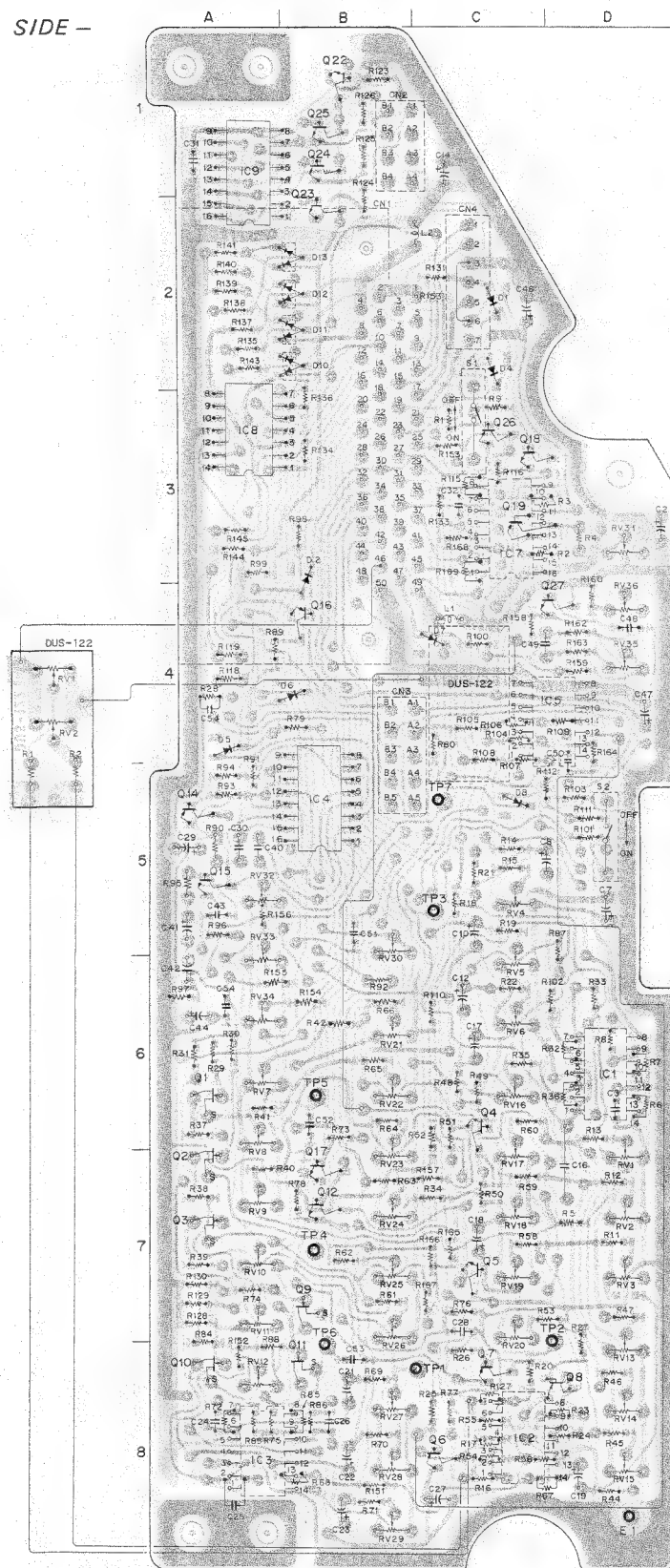
S1 B-6  
S2 A-6  
S3 A-2

TP1 B-4  
TP2 B-3  
TP3 B-4  
TP4 B-7  
TP5 B-8  
TP6 A-7  
TP7 A-8  
TP8 A-9  
TP9 C-6

# SH-8A

Parts. No. 1-608-890-14

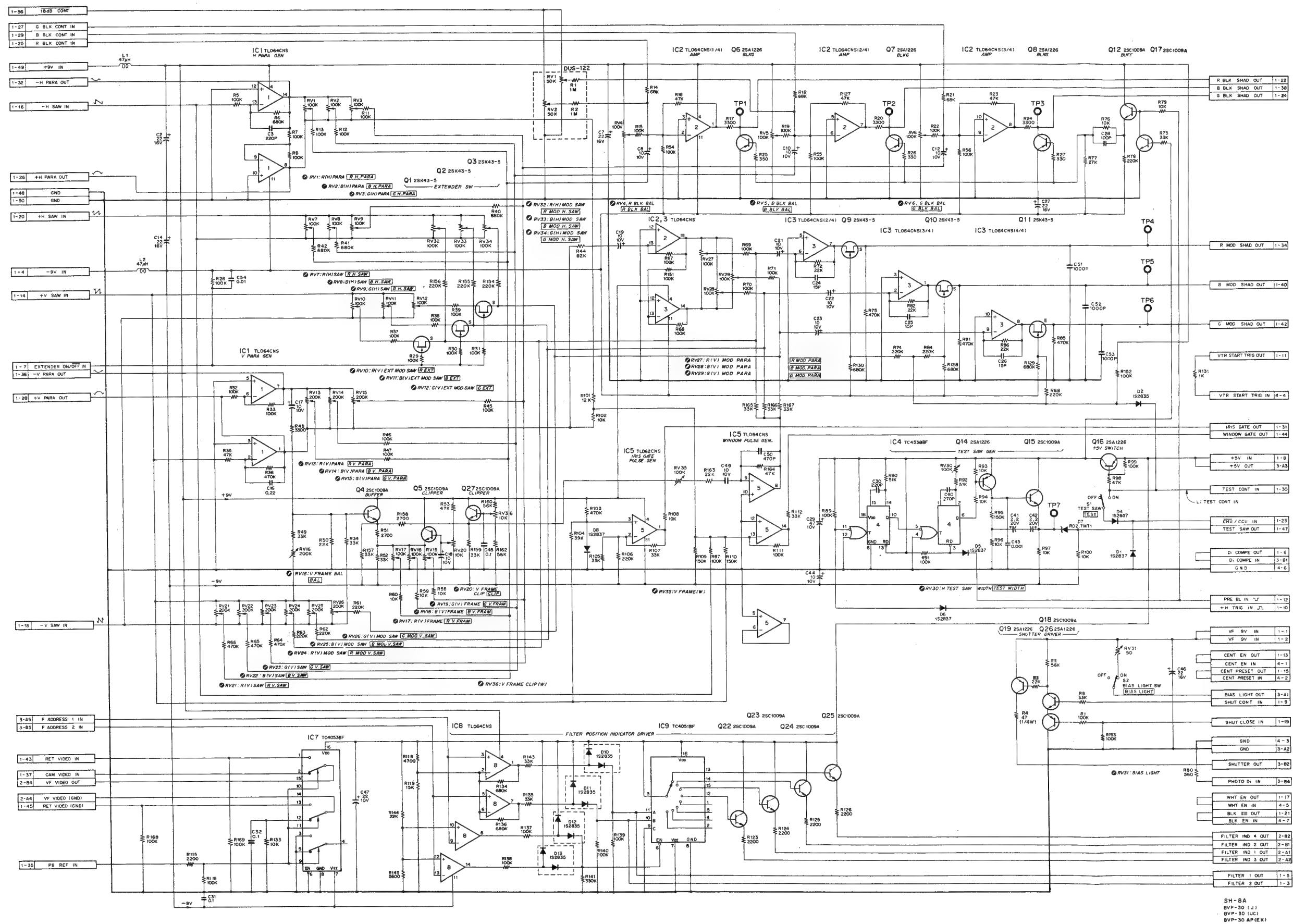
SH-8A BOARD  
- SOLDERING SIDE -



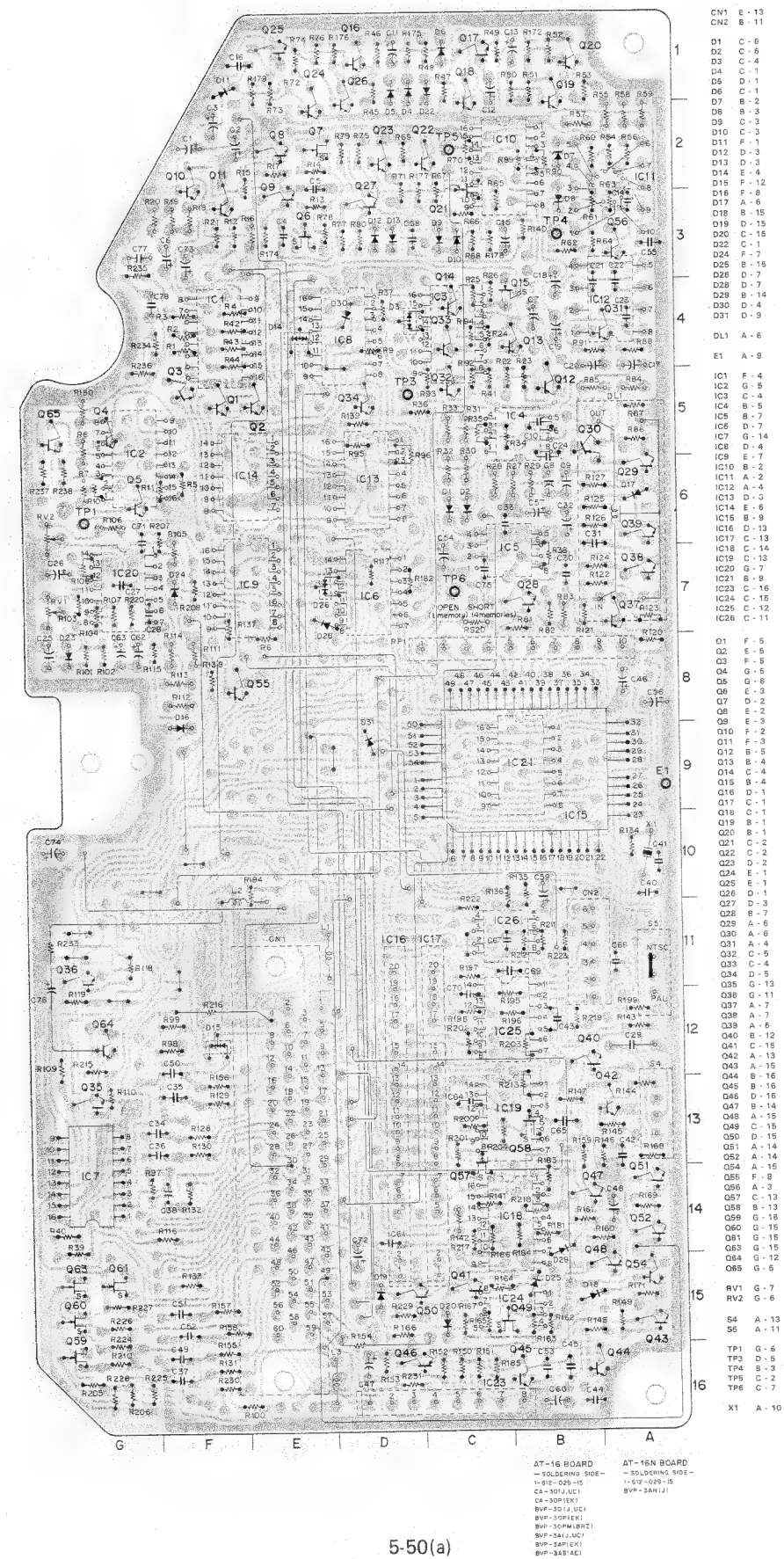
- CN1 B-2
- CN2 B-1
- CN3 B-4
- CN4 C-2
- E1 D-8
- D1 C-2
- D2 B-3
- D4 C-2
- D5 A-4
- D6 B-4
- D7 C-4
- D8 C-5
- D10 B-2
- D11 B-2
- D12 B-2
- D13 B-2
- IC1 D-6
- IC2 C-8
- IC3 A-8
- IC4 B-5
- IC5 D-4
- IC7 C-3
- IC8 A-3
- IC9 A-1
- Q1 A-8
- Q2 A-7
- Q3 A-7
- Q4 C-6
- Q5 C-7
- Q6 C-8
- Q7 C-8
- Q8 C-8
- Q9 B-7
- Q10 A-8
- Q11 B-8
- Q12 B-7
- Q14 A-5
- Q15 A-5
- Q16 B-4
- Q17 B-7
- Q18 C-3
- Q19 C-3
- Q22 B-1
- Q23 B-2
- Q24 B-1
- Q25 B-1
- Q27 D-4
- RV1 D-7
- RV2 D-7
- RV3 D-7
- RV4 C-5
- RV5 C-6
- RV6 C-6
- RV7 A-6
- RV8 A-6
- RV9 A-7
- RV10 A-7
- RV11 A-7
- RV12 A-8
- RV13 D-8
- RV14 D-8
- RV15 D-8
- RV16 C-6
- RV17 C-7
- RV18 C-7
- RV19 C-7
- RV20 C-7
- RV21 B-6
- RV22 B-6
- RV23 B-7
- RV24 B-7
- RV25 B-7
- RV26 B-7
- RV27 B-8
- RV28 B-8
- RV29 B-8
- RV30 B-8
- RV31 D-3
- RV32 A-5
- RV33 A-6
- RV34 A-6
- RV35 D-4
- RV36 D-4
- S1 C-3
- S2 D-5
- TP1 C-8
- TP2 D-7
- TP3 C-5
- TP4 B-7
- TP5 B-6
- TP6 B-8
- TP7 C-5

SH-8A BOARD-14  
BVP-10 (LUCI)  
BVP-30AP (EX)

## SH-8A BOARD



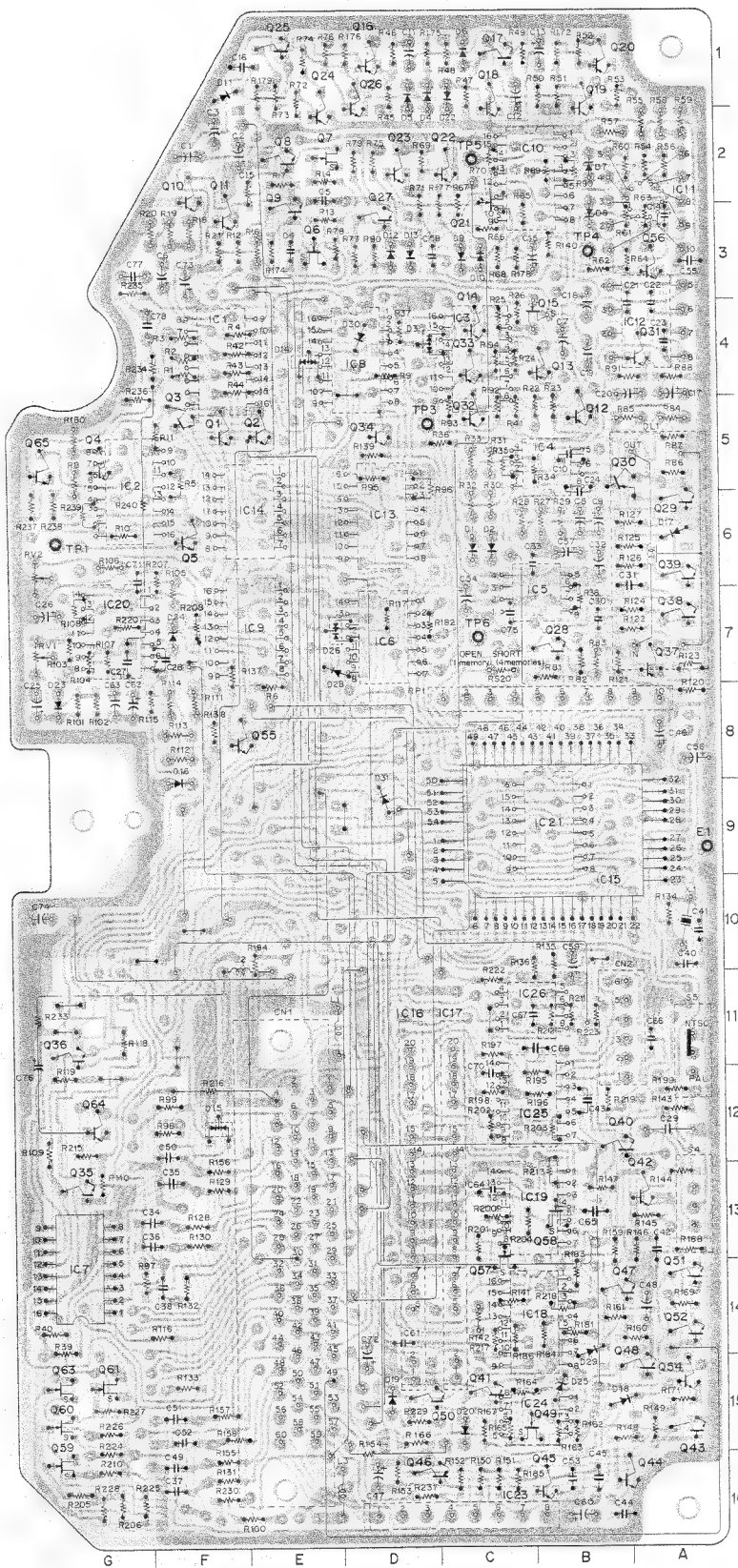




5-50(a)

AT-16/16N

PARTS NO. 1-162-029-16, 17



CN1 E-13  
CN2 B-17

D1 C-8  
D2 C-8  
D3 C-4  
D4 C-1  
D5 D-1  
D6 C-1  
D7 B-2  
D8 B-3  
D9 C-3  
D10 C-3  
D11 F-1  
D12 D-3  
D13 D-3  
D14 E-4  
D15 F-12  
D16 F-8  
D17 A-6  
D18 B-15  
D19 D-15  
D20 C-15  
D22 C-1  
D24 F-7  
D25 B-15  
D26 D-7  
D28 D-7  
D29 B-4  
D30 D-4  
D31 D-9

DL1 A-6

E1 A-9

IC1 F-4  
IC2 G-5  
IC3 G-4  
IC4 B-5  
IC5 B-7  
IC6 D-7  
IC7 G-14  
IC8 D-4  
IC9 E-7  
IC10 B-2  
IC11 A-2  
IC12 A-4  
IC13 D-6  
IC14 E-8  
IC15 B-9  
IC16 D-13  
IC17 C-13  
IC18 C-14  
IC19 C-13  
IC20 G-7  
IC21 B-9  
IC22 C-16  
IC24 C-15  
IC25 C-12  
IC26 C-11

Q1 F-6  
Q2 E-5  
Q3 F-5  
Q4 Q-5  
Q5 F-6  
Q6 E-3  
Q7 D-2  
Q8 E-2  
Q9 E-3  
Q10 F-2  
Q11 F-3  
Q12 B-5  
Q13 B-4  
Q14 C-4  
Q15 B-4  
Q16 D-1  
Q17 C-1  
Q18 C-1  
Q19 B-1  
Q20 B-1  
Q21 C-2  
Q22 C-2  
Q23 D-2  
Q24 E-1  
Q25 E-1  
Q26 D-1  
Q27 D-3  
Q28 B-7  
Q29 A-6  
Q30 A-6  
Q31 A-4  
Q32 C-6  
Q33 C-4  
Q34 D-5  
Q35 G-13  
Q36 G-11  
Q37 A-7  
Q38 A-7  
Q39 A-6  
Q40 B-12  
Q41 C-15  
Q42 A-13  
Q43 A-15  
Q44 B-16  
Q45 B-18  
Q46 D-16  
Q47 B-14  
Q48 A-15  
Q49 C-15  
Q50 D-15  
Q51 A-14  
Q52 A-14  
Q54 A-15  
Q55 F-8  
Q56 A-3  
Q57 C-13  
Q58 B-13  
Q59 G-16  
Q60 G-15  
Q61 G-15  
Q63 G-15  
Q64 G-12  
Q65 G-5

Q1 F-6

Q2 E-5

Q3 F-5

Q4 Q-5

Q5 F-6

Q6 E-3

Q7 D-2

Q8 E-2

Q9 E-3

Q10 F-2

Q11 F-3

Q12 B-5

Q13 B-4

Q14 C-4

Q15 B-4

Q16 D-1

Q17 C-1

Q18 C-1

Q19 B-1

Q20 B-1

Q21 C-2

Q22 C-2

Q23 D-2

Q24 E-1

Q25 E-1

Q26 D-1

Q27 D-3

Q28 B-7

Q29 A-6

Q30 A-6

Q31 A-4

Q32 C-6

Q33 C-4

Q34 D-5

Q35 G-13

Q36 G-11

Q37 A-7

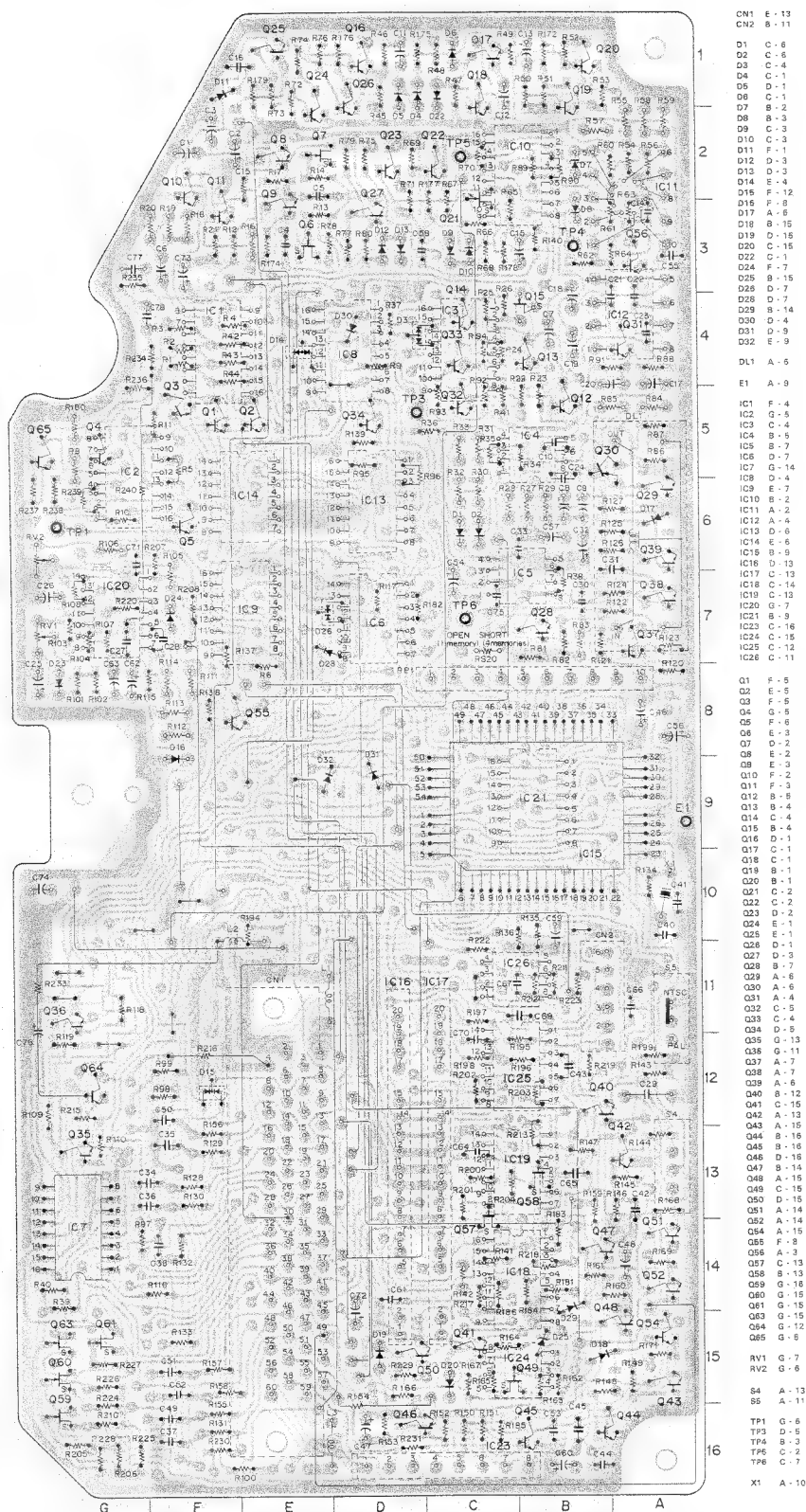
RV1 B-7  
RV2 G-6  
S4 A-13  
S5 A-11  
TP1 G-6  
TP3 D-5  
TP4 B-3  
TP5 C-2  
TP6 C-7  
X1 A-10

AT-16 BOARD  
- SOLDERING SIDE -  
I-62-029-16,17  
CA-30/SOL/LUCI  
CA-30P/SOP/LEKI  
CA-30PM/BRZ  
BVP-30/LUCI  
BVP-30AP/LUCI  
BVP-30PM/BRZ  
BVP-30/LUCI  
BVP-30P/LEKI  
BVP-30S/LEKI

AT-16N BOARD  
- SOLDERING SIDE -  
I-62-029-16,17  
BVP-30/LUCI

T-16/16N

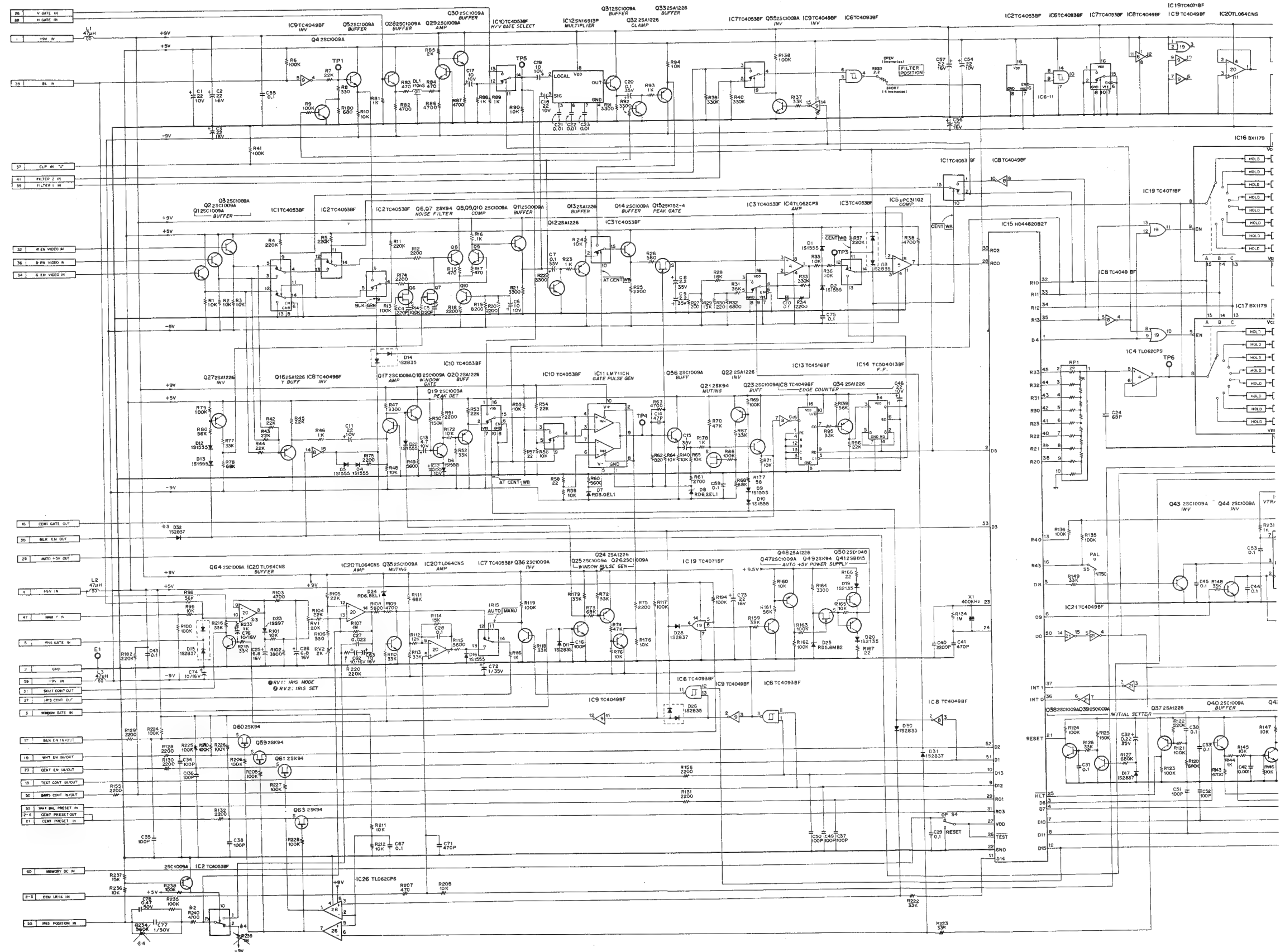
PARTS NO. 1-162-029-18

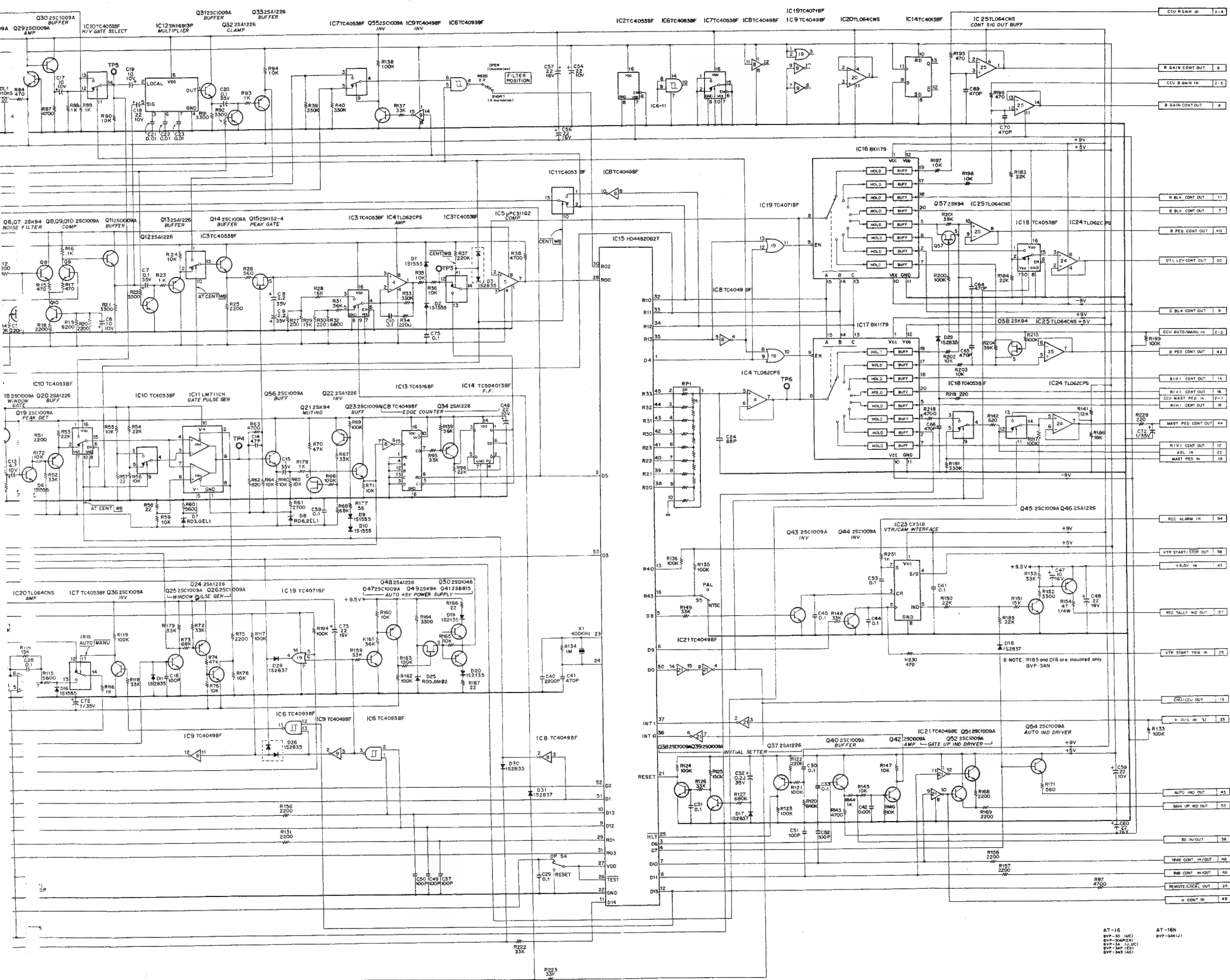


<b>AT-16 BOARD</b> - SOLDERING SIDE - 1-61Z-029-18 CA-30/SOL(4UC) CA-30P/SOL(1EK) CA-30PM(SBZ) BVP-301J,UC1 BVP-30AP(1EK) BVP-30PM(SBZ) BVP-3A1J,UC BVP-3AP(1EK) BVP-3AS1AE	<b>AT-16N BOARD</b> - SOLDERING SIDE - 1-61Z-029-18 BVP-3AN(1J)
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5-50(c)

AT-16 BOARD



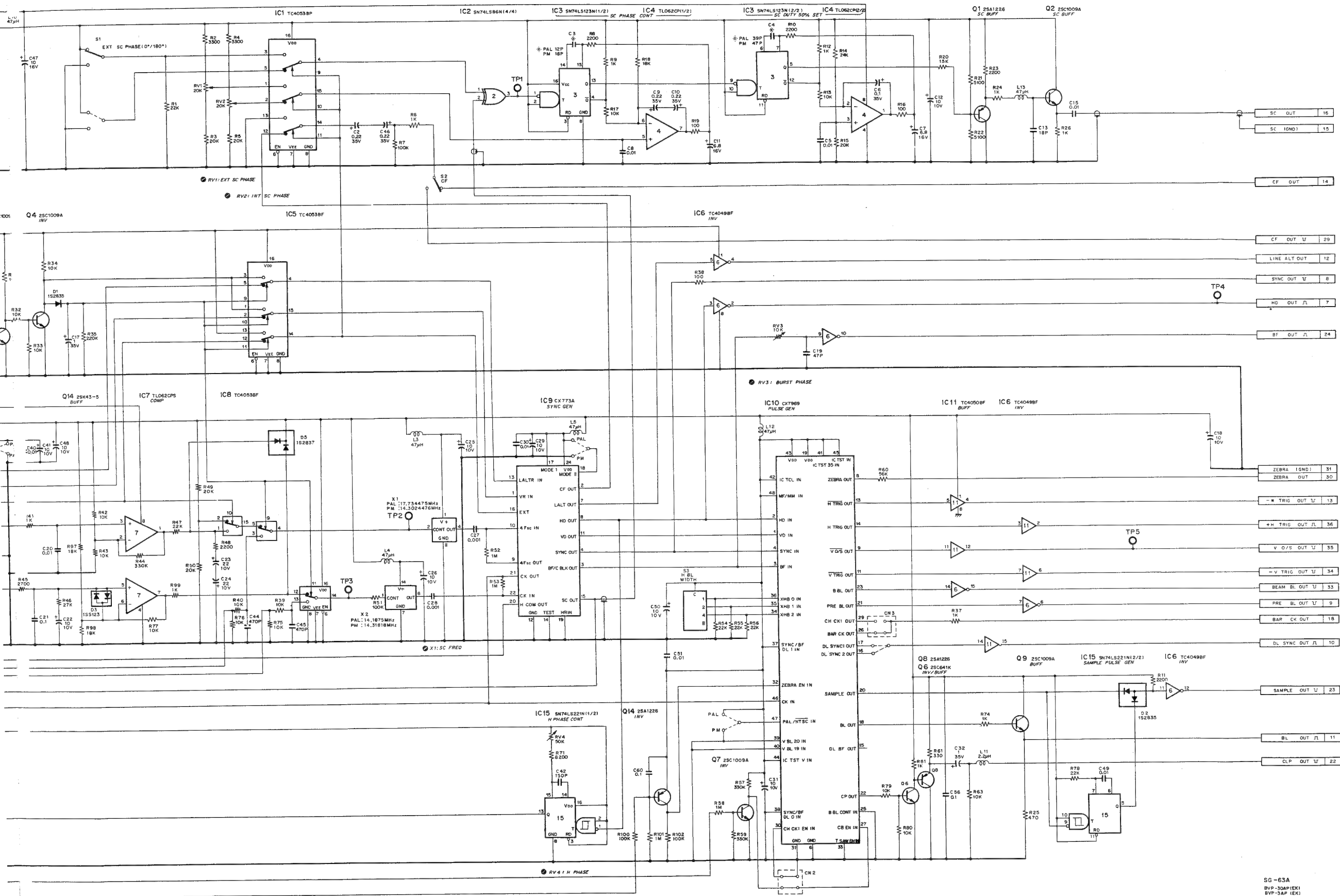


NOTE

IC	CHANGE INFORMATION	SERIAL NO.
Q1	Q1 25C1009A	Q1 25C1009A
Q2	Q2 25C1009A	Q2 25C1009A
Q3	Q3 25C1009A	Q3 25C1009A
Q4	Q4 25C1009A	Q4 25C1009A
Q5	Q5 25C1009A	Q5 25C1009A
Q6	Q6 25C1009A	Q6 25C1009A
Q7	Q7 25C1009A	Q7 25C1009A
Q8	Q8 25C1009A	Q8 25C1009A
Q9	Q9 25C1009A	Q9 25C1009A
Q10	Q10 25C1009A	Q10 25C1009A

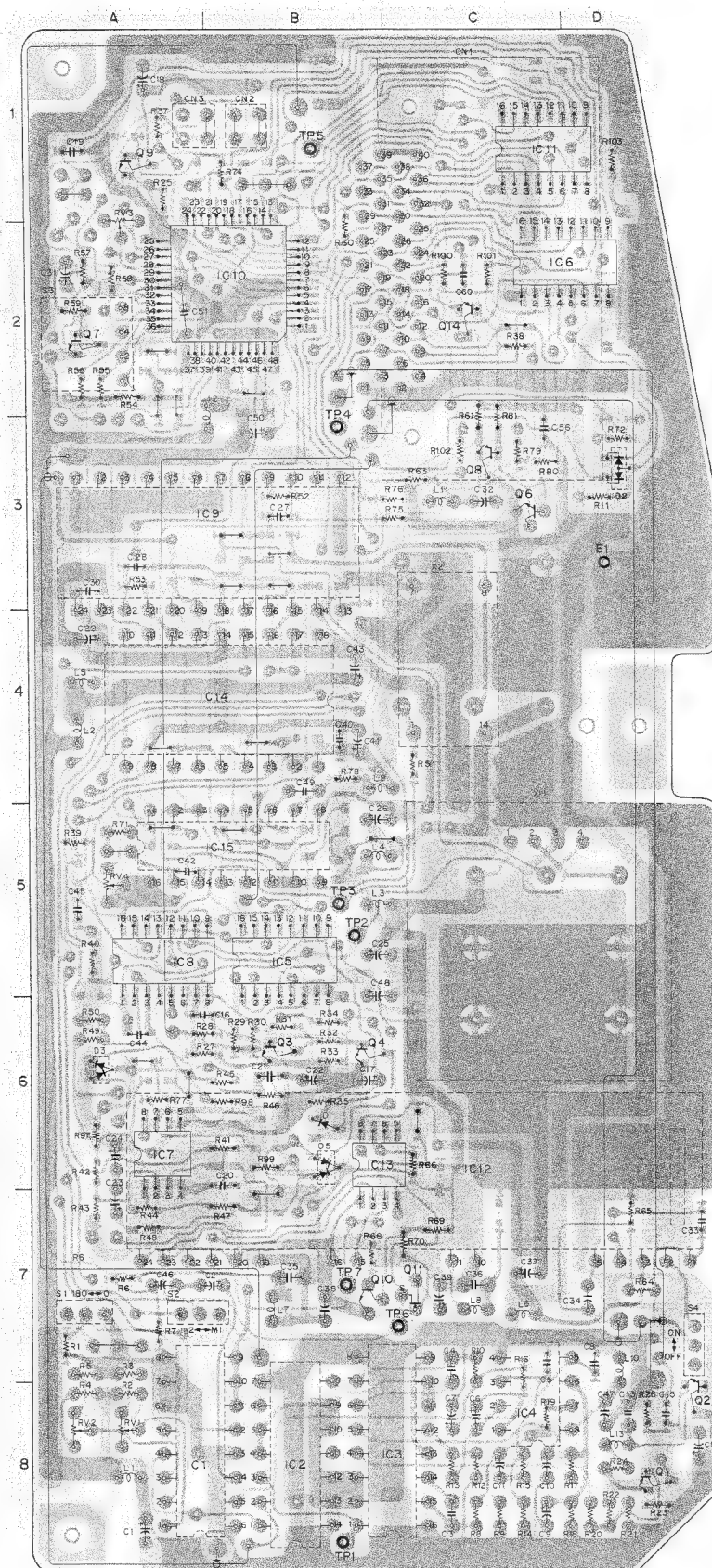






## SG-63A BOARD — SOLDERING SIDE —

Parts. No. 1-608-892-25

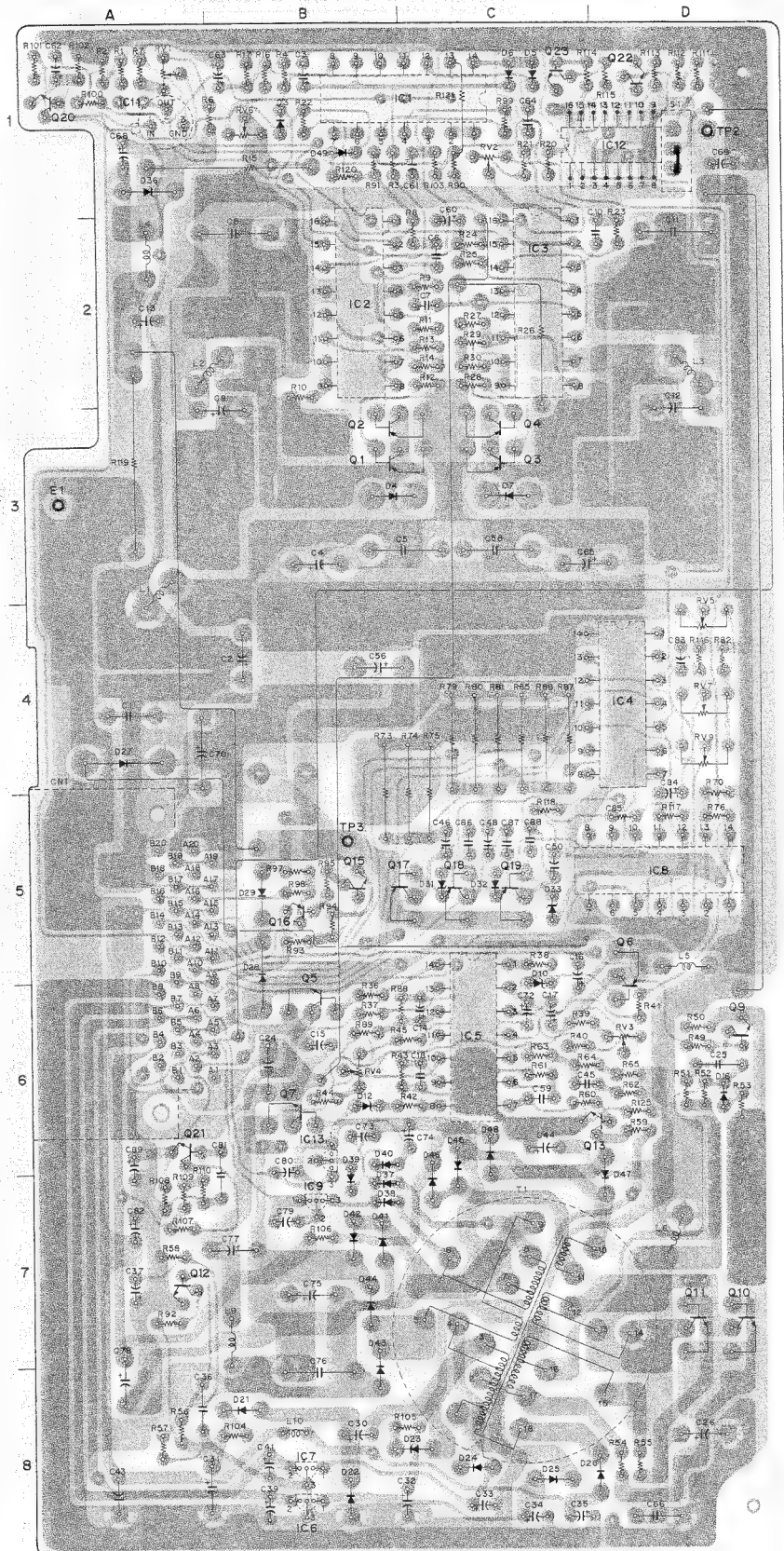


CN2	B-1
CN3	A-1
D1	B-6
D2	D-3
D3	A-6
D5	B-6
E1	D-3
IC1	A-8
IC2	B-8
IC3	C-8
IC4	C-8
IC5	B-5
IC6	D-2
IC7	A-5
IC8	A-5
IC9	B-3
IC10	B-2
IC11	C-1
IC12	C-6
IC13	B-6
IC14	B-4
IC15	B-5
Q1	D-8
Q2	D-8
Q3	B-6
Q4	B-6
Q6	C-3
Q7	A-2
Q8	C-3
Q9	A-1
Q10	B-7
Q11	C-7
Q14	C-2
RV1	A-8
RV2	A-8
RV3	A-1
RV4	A-5
S1	A-7
S2	A-7
S3	A-2
S4	D-7
TP1	B-8
TP2	B-5
TP3	B-5
TP4	B-3
TP5	B-1
TP6	C-7
TP7	B-7
X1	C-5
X2	C-4



PARTS NO. 1-612-381-12

**PS-41 BOARD**  
**POWER SUPPLY**  
**ELECTRICAL FOCUS**  
**- SOLDERING SIDE -**



CN1 A-5

D3 B-1  
 D4 B-3  
 D5 C-1  
 D6 C-1  
 D7 C-3  
 D10 C-6  
 D12 B-6  
 D16 D-6  
 D21 B-8  
 D22 B-8  
 D23 D-8  
 D24 D-8  
 D25 D-3  
 D26 D-8  
 D27 A-4  
 D28 B-5  
 D29 B-5  
 D31 C-5  
 D32 C-5  
 D33 C-5  
 D36 A-1  
 D37 B-7  
 D38 B-7  
 D39 B-7  
 D40 B-6  
 D41 B-7  
 D42 B-8  
 D43 B-6  
 D44 B-7  
 D45 C-8  
 D46 C-5  
 D47 D-6  
 D48 C-5  
 D49 B-1

E1 A-3

IC1 B-1  
 IC2 B-2  
 IC3 C-2  
 IC4 D-4  
 IC5 C-6  
 IC6 B-6  
 IC7 B-8  
 IC8 D-5  
 IC9 B-7  
 IC11 A-1  
 IC12 D-1  
 IC13 B-5

Q1 B-3  
 Q2 B-3  
 Q3 C-3  
 Q4 C-3  
 Q5 B-6  
 Q6 D-8  
 Q7 B-8  
 Q8 D-8  
 Q9 D-8  
 Q10 D-7  
 Q11 D-7  
 Q12 A-7  
 Q13 C-6  
 Q15 B-5  
 Q16 B-5  
 Q17 B-5  
 Q18 C-5  
 Q19 C-5  
 Q20 A-1  
 Q21 A-6  
 Q22 D-1  
 Q23 C-1

RV1 A-1  
 RV2 C-1  
 RV3 D-6  
 RV4 B-6  
 RV5 D-4  
 RV6 B-1  
 RV7 D-4  
 RV8 D-4

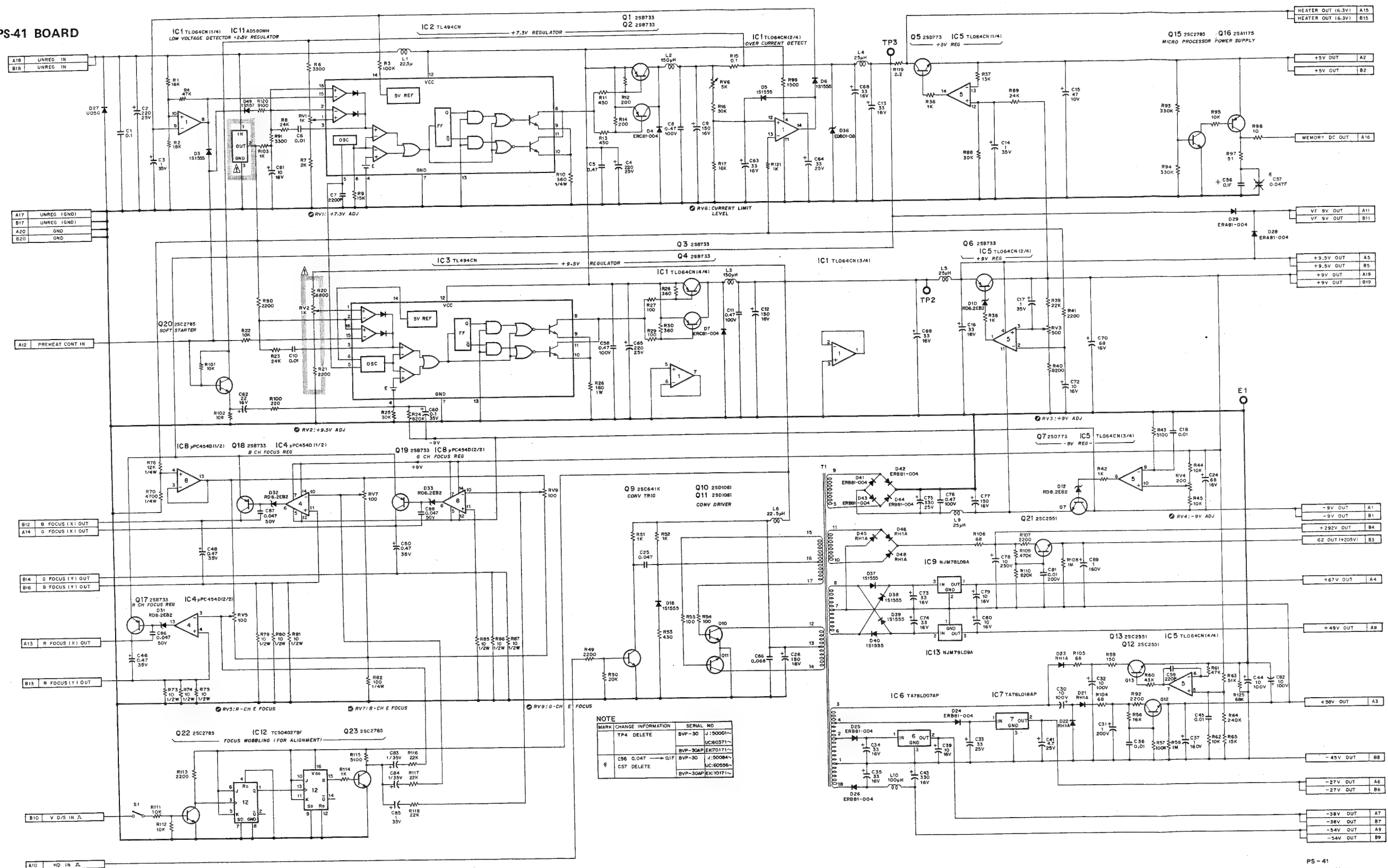
S1 D-1

TP2 D-1


TP3 B-5

PS-41 BOARD  
 SOLDERING SIDE  
 1-612-381-12  
 BVP-30(L) (U)  
 BVP-30A(IEK)  
 BVP-30 PM(ER)

PS-41 BOARD

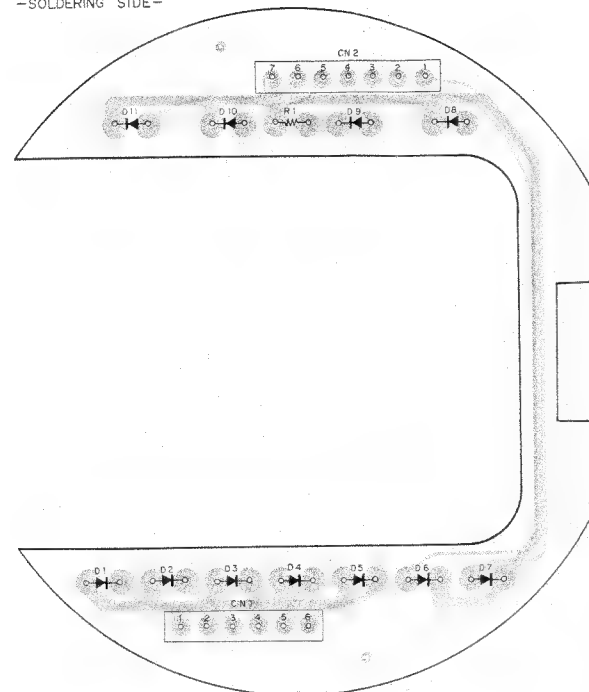


NOTE:

The shaded and -marked components are critical to safety. Replace only with same components as specified.

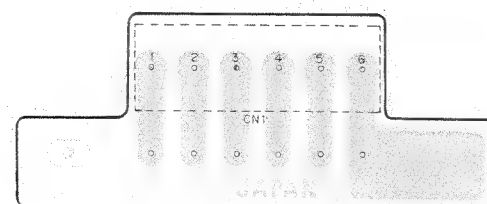
VIEW FINDER  
LP-28 BOARD  
MC-19 BOARD  
SW-80 BOARD  
VF-22 BOARD

LP-28 BOARD  
-SOLDERING SIDE-



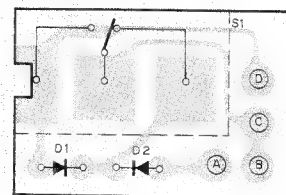
1-612-777-11  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AE)  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)

MC-19 BOARD  
-SOLDERING SIDE-



MC-19 BOARD  
1-606-127-12  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AE)  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)

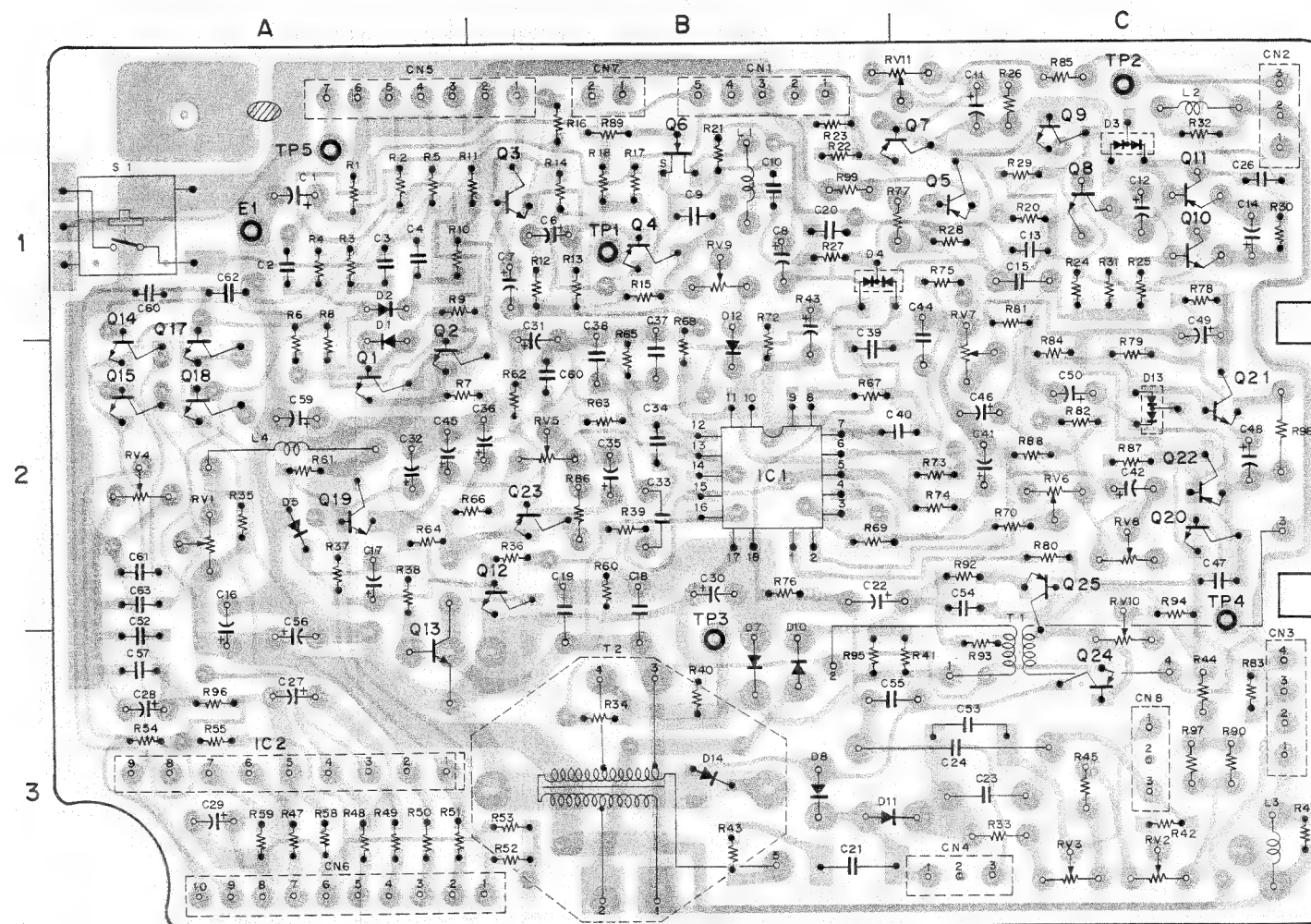
SW-80 BOARD  
-SOLDERING SIDE-



1-612-778-11  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AE)  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)

VF-22 BOARD  
-SOLDERING SIDE-

VF-22 BOARD  
-SOLDERING SIDE-

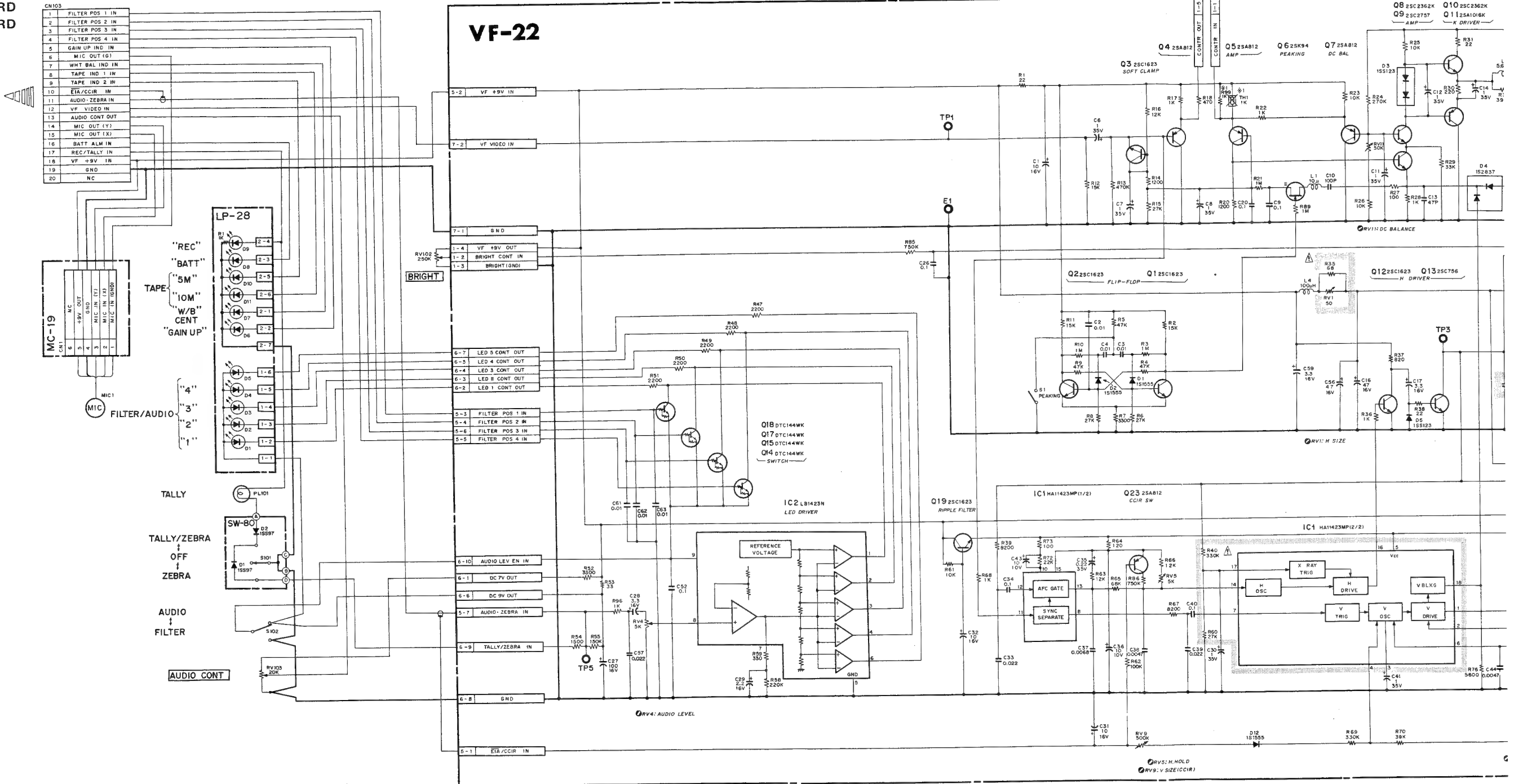
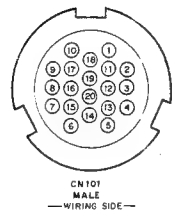


Parts. No. 1-612-611-13

1-612-611-13  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AE)  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)

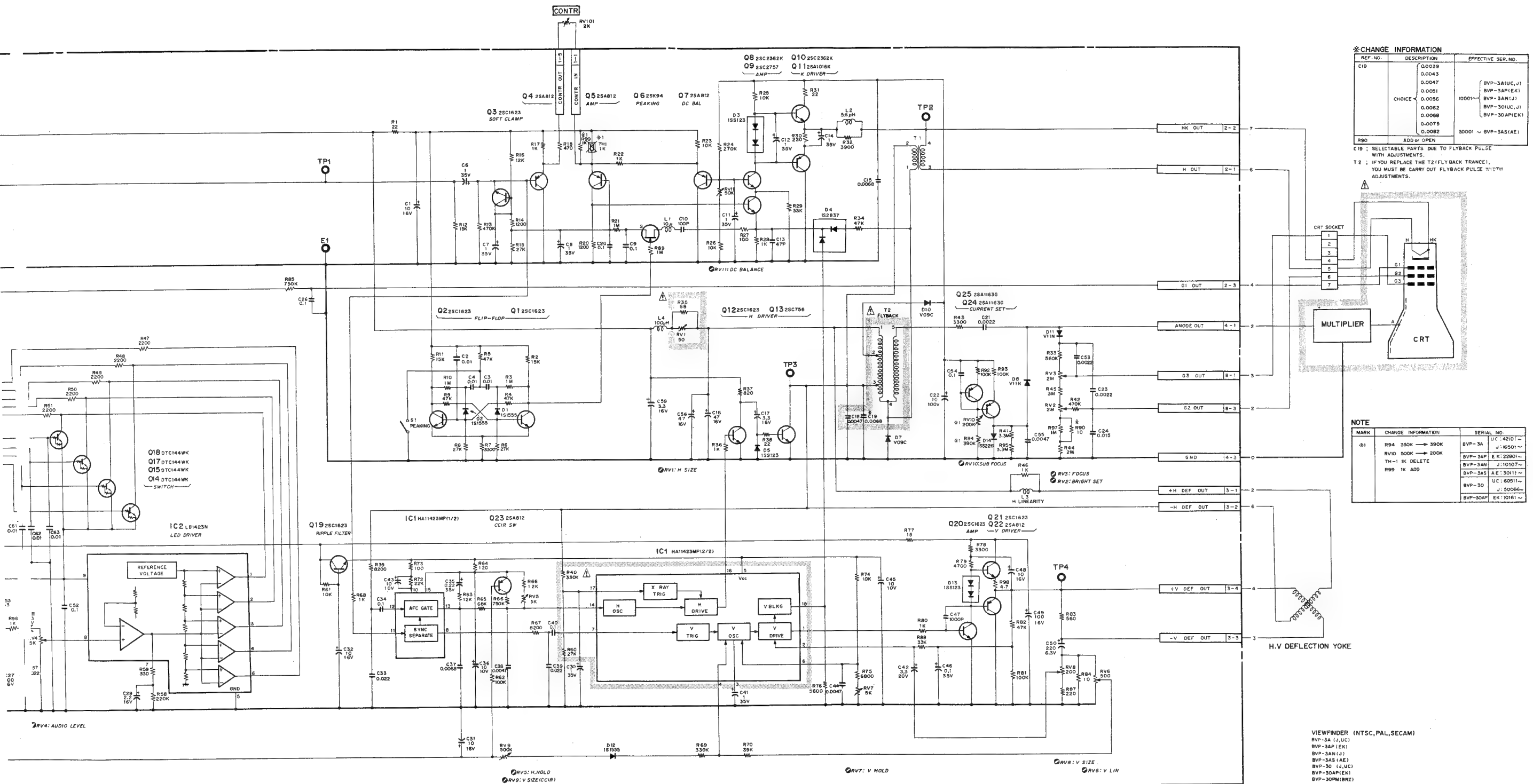
CN1	B -1	RV1	A -2
CN2	C -1	RV2	C -3
CN3	C -3	RV3	C -3
CN4	C -3	RV4	A -2
CN5	A -1	RV5	B -2
CN6	A -3	RV6	C -2
CN7	B -1	RV7	C -2
CN8	C -3	RV8	C -2
		RV9	B -1
D1	A -2	RV10	C -3
D2	A -1	RV11	C -1
D3	C -1		
D4	B -1	S1	A -1
D5	A -2		
D7	B -3	TP1	B -1
D8	B -3	TP2	C -1
D10	B -3	TP3	B -3
D11	B -3	TP4	C -2
D12	B -2	TP5	A -1
D13	C -2		
D14	B -3		
E1	A -1		
IC1	B -2		
IC2	A -3		
Q1	A -2		
Q2	A -2		
Q3	B -1		
Q4	B -1		
Q5	C -1		
Q6	B -1		
Q7	C -1		
Q8	C -1		
Q9	C -1		
Q10	C -1		
Q11	C -1		
Q12	B -2		
Q13	A -3		
Q14	A -2		
Q15	A -2		
Q17	A -2		
Q18	A -2		
Q19	A -2		
Q20	C -2		
Q21	C -2		
Q22	C -2		
Q23	B -2		
Q24	C -3		
Q25	C -2		

VIEWFINDER  
LP-28 BOARD  
MC-19 BOARD  
SW-80 BOARD  
VF-22 BOARD



NOTE:

The shaded and  $\Delta$ -marked components are critical to safety.  
Replace only with same components as specified.





BVP-30(J) up to 50065  
BVP-30(UC) up to 60510  
BVP-30AP(EK) up to 10160  
BVP-3A(J) up to 16415  
BVP-3A(UC) up to 42020  
BVP-3AN(J) up to 10106  
BVP-3AP(EK) up to 22710  
BVP-3AS(AE) up to 30110

1-612-385-11  
BVP-30 (J,UC)  
BVP-30AP(EK)  
BVP-30PM(BRZ)  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AEP)

1-612-379-13  
BVP-30(UC,J)  
BVP-30AP(EK)  
BVP-30PM(BRZ)  
BVP-3A(UC,J)  
BVP-3AN(J)  
BVP-3API(EK)  
BVP-3AS(AE)

A diagram showing a 16-point grid. The points are numbered 1 through 16. A dashed line labeled 'CNS' runs horizontally across the grid, passing through points 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, and 16. The points are arranged in two rows of eight. The top row contains points 1, 2, 3, 4, 5, 6, 7, and 8. The bottom row contains points 9, 10, 11, 12, 13, 14, 15, and 16. The dashed line 'CNS' is positioned between the two rows of points.

1-612-250-11  
CA-30/30L (J,UC)  
CA-30P/30FLIEK  
CA-30PM (BRZ)  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AEP)

A 3x5 grid of numbers 1-15 and a circular arrangement of numbers 1-12.

4	3	2	1	5	6
3	1	9	8	6	
4	2	10	7	5	

Below the grid is a circular arrangement of numbers 1-12, with a 'CNI' label and a bracket pointing to the number 10.

CNI

10

1 2 3 4 5 6 7 8 9 10 11 12

CN-65 BOARD -13  
BVP-30 (J,UC)  
BVP-30A(IEK)  
BVP-30PM(BRZ)  
BVP-3A (J,UC)  
BVP-3AN(J)  
BVP-3AP(IEK)  
BVP-3AS(AEP)

SW-77,79 BOARD -11

PARTS NO. 1-612-354-12

HN-30B BOARD  
1-612-354-12  
BVP-30(J,UC)  
BVP-30AP(EK)  
BVP-30PM(BRZ)

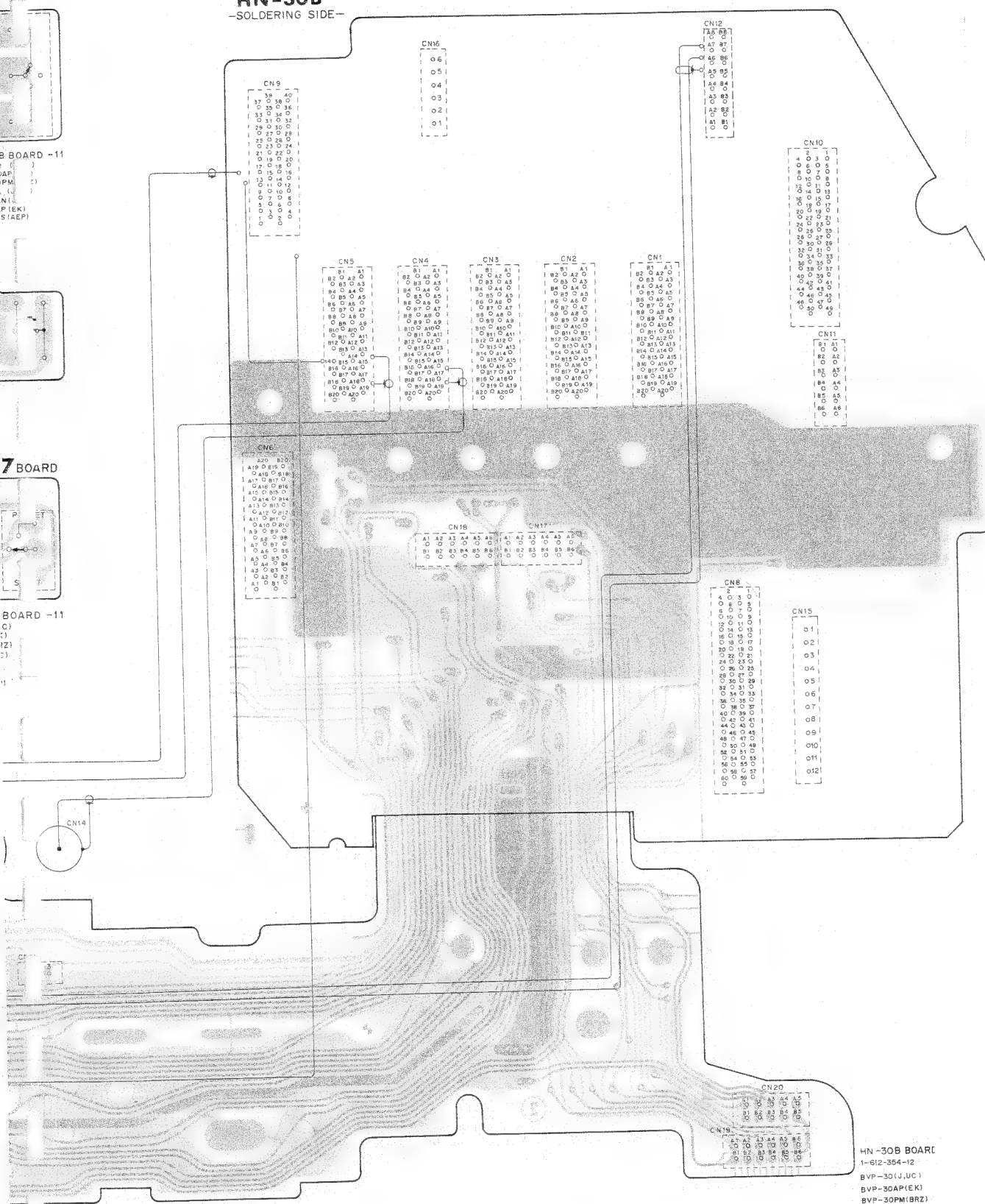
5-67(a)

N-30B (1/2)

SOLDERING SIDE -

PARTS NO. 1-612-354-12

HN-30B  
-SOLDERING SIDE-





BVP-30(J) 50066 AND HIGHER  
BVP-30(UC) 60511 AND HIGHER  
BVP-30A(PEK) 10161 AND HIGHER  
BVP-3A(J) 16416 AND HIGHER  
BVP-3A(CJ) 42021 AND HIGHER  
BVP-3AN(J) 10107 AND HIGHER  
BVP-3A(PEK) 22711 AND HIGHER  
BVP-3AS(AE) 30111 AND HIGHER

1-612-385-11  
BVP-30 (J,UC)  
BVP-30AP (EK)  
BVP-30PM (BRZ)  
BVP-3A (J,UC)  
BVP-3AN (J)  
BVP-3AP (EK)  
BVP-3AS (AEP)

1-612-379-13  
BVP-30(UC,J)  
BVP-30A(IEK)  
BVP-30PM(BRZ)  
BVP-3A(UC,J)  
BVP-3AN(J)  
BVP-3A(IEK)  
BVP-3A(AE)

1-612-250-11  
CA-30/30L(J,UC)  
CA-30P/30FL(EK)  
CA-30PM(BRZ)  
BVP-30(J,UC)  
BVP-30AP(EK)  
BVP-30PM(BRZ)  
BVP-3A(J,UC)  
BVP-3AN(J)  
BVP-3AP(EK)  
BVP-3AS(AEP)

A 4x5 grid of numbers from 1 to 20. A circular area is drawn around the bottom half of the grid, containing numbers 1 through 12. Inside the circle, there is a small table with the text 'CNI' and some numbers.

1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12

1 608 897

CN-65 BOARD -13  
BVP-30 (J,UC)  
BVP-30AP(EK)  
BVP-30PM(9RZ)  
BVP-3A (J,UC)  
BVP-3AN(J)  
BVP-3AP(EK)  
BVP-3AS(AEP)

[illegible]

SW-77,79 BOARD -11  
BVP-30 (J,UC)  
BVP-30AP(EK)  
BVP-30PM(BRZ)  
BVP-3A (J,UC)  
BVP-3AN(J)  
BVP-3AP(EK)  
BVP-3AS(AEP)

PARTS NO. 1-612-354-13

SOLDERING SIDE-

CN9

CN16

CN10

CN11

CN8

CN15

CN17

CN18

CN19

CN20

HN-30B BOARD  
1-612-354-13

HN-30B BOARD  
1-612-354-13  
BVP-30(J,UC)  
BVP-30AP(EK)  
BVP-30PM(BRZ)

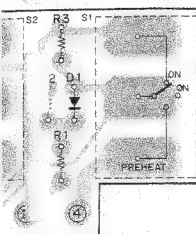
5-67(b)

HN-30  
-SO<sub>2</sub>

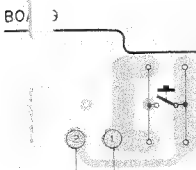


HN-30B (1/2)  
- SOLDERING SIDE -

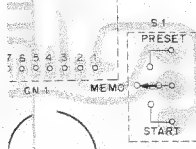
PARTS NO. 1-612-354-13



SW-207 BOARD  
1-608-942-11  
BVP-3A (J,UC)  
BVP-3A (J,UC)  
BVP-3A (J,UC)  
BVP-3A (J,UC)  
BVP-3A (J,UC)  
BVP-3A (J,UC)

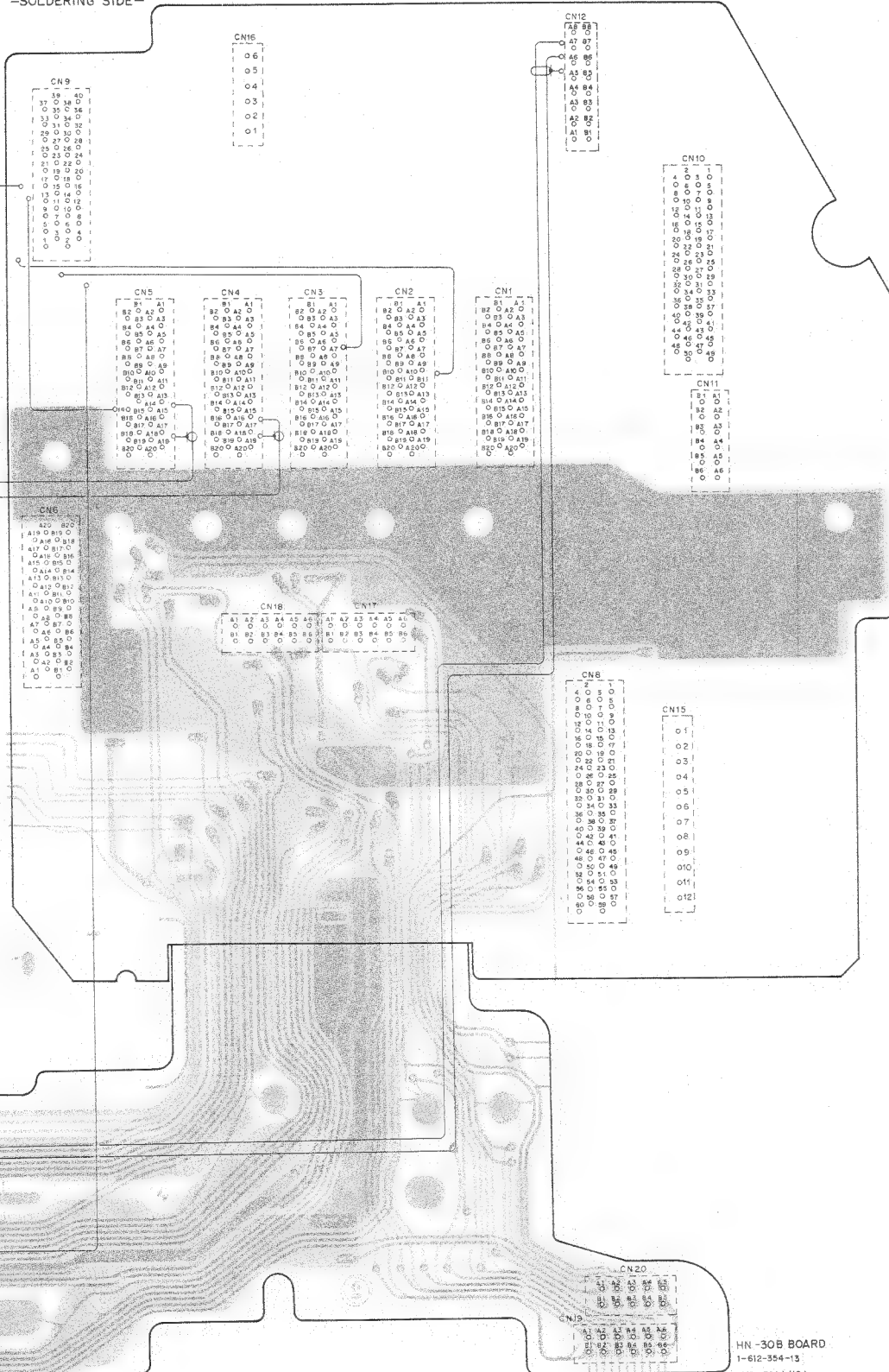


SW-77 BOARD



SW-77,79 BOARD -11  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)

HN-30B  
- SOLDERING SIDE -



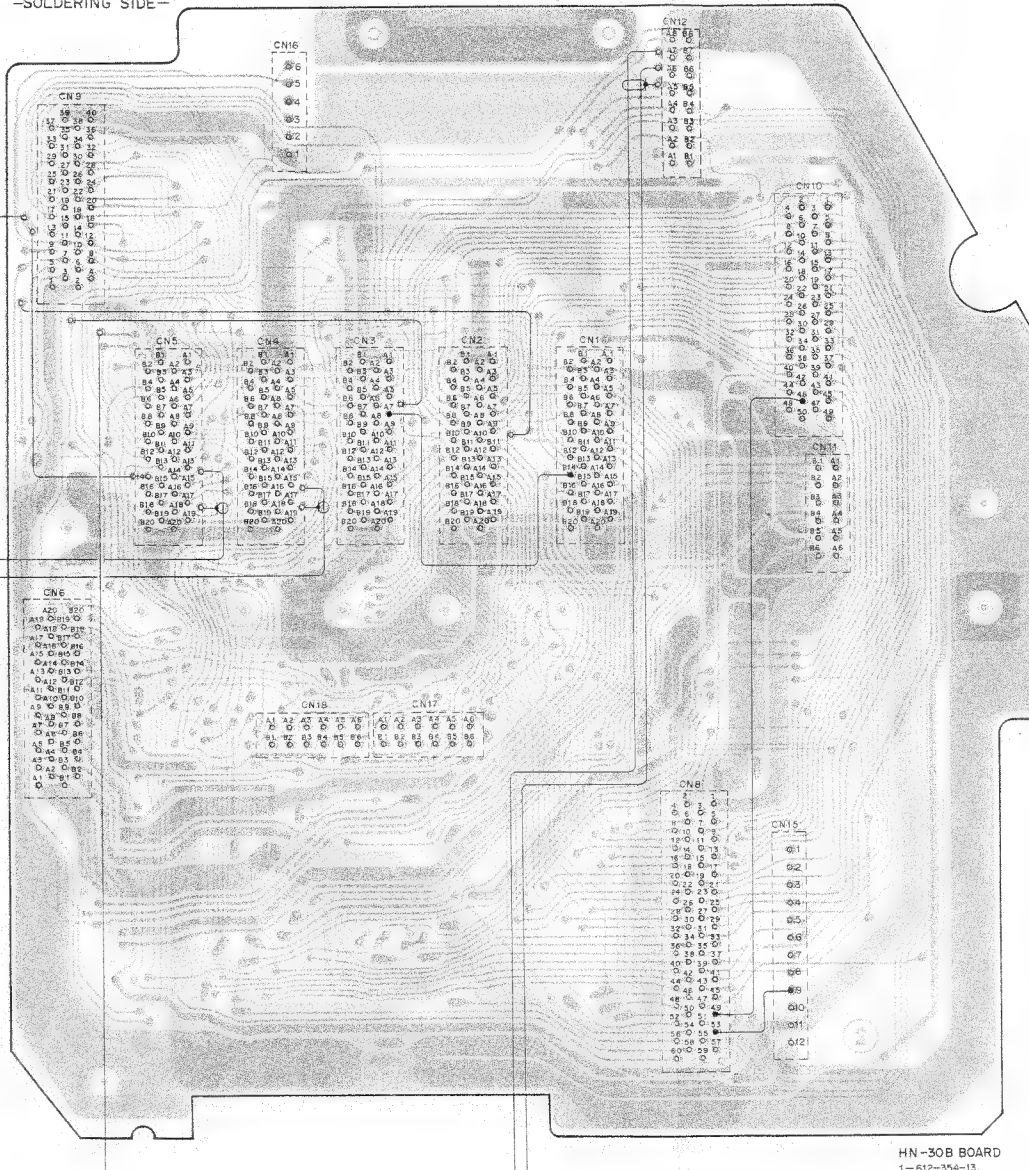
HN-30B BOARD  
1-612-354-13  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)

5-67(b)

HN-30B (1/2)  
- SOLDERING SIDE -

PARTS NO. 1-612-354-13

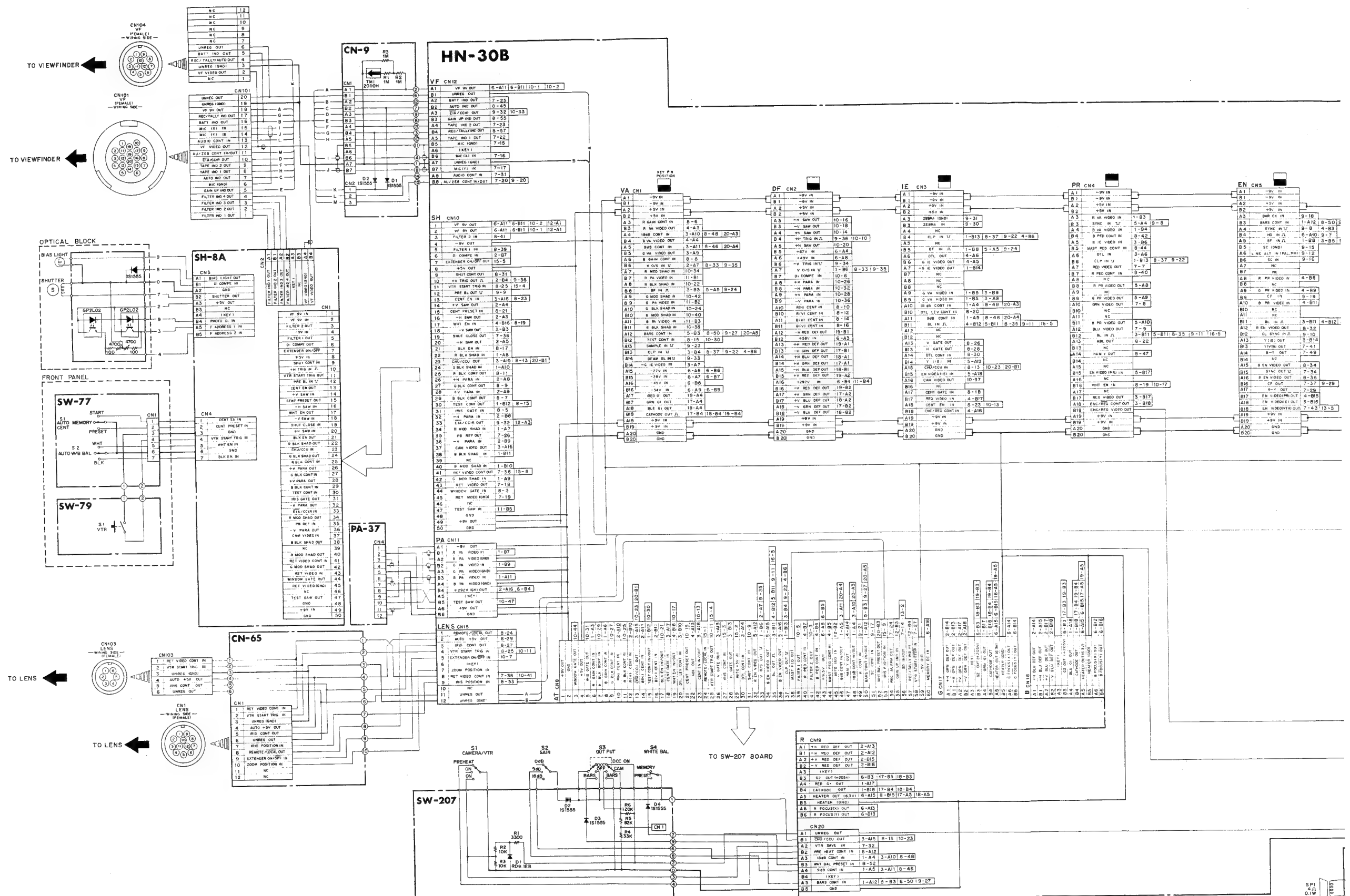
HN-30B  
- SOLDERING SIDE -

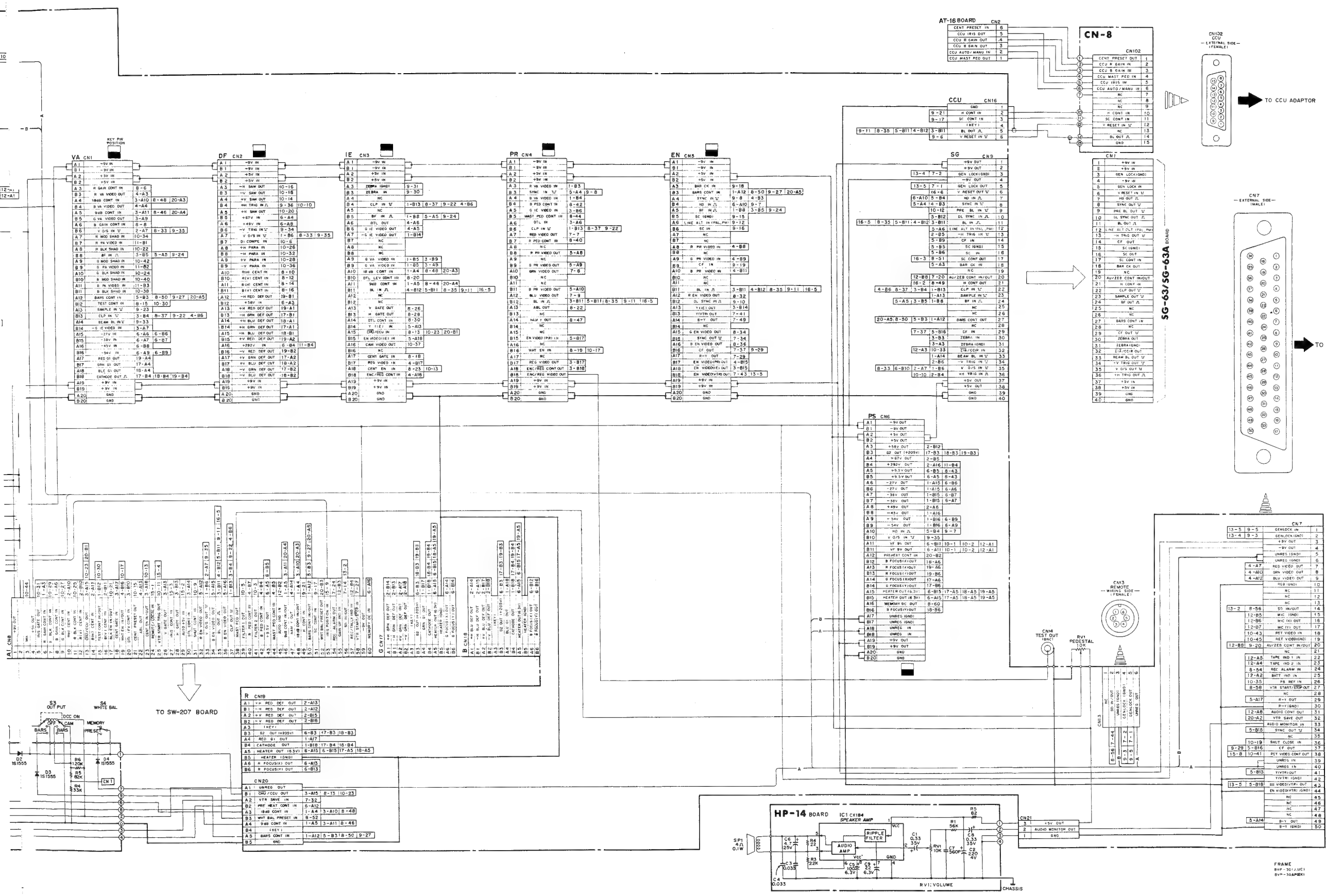


HN-30B BOARD  
1-612-354-13  
BVP-30 (J,UC)  
BVP-30 (J,UC)  
BVP-30 (J,UC)

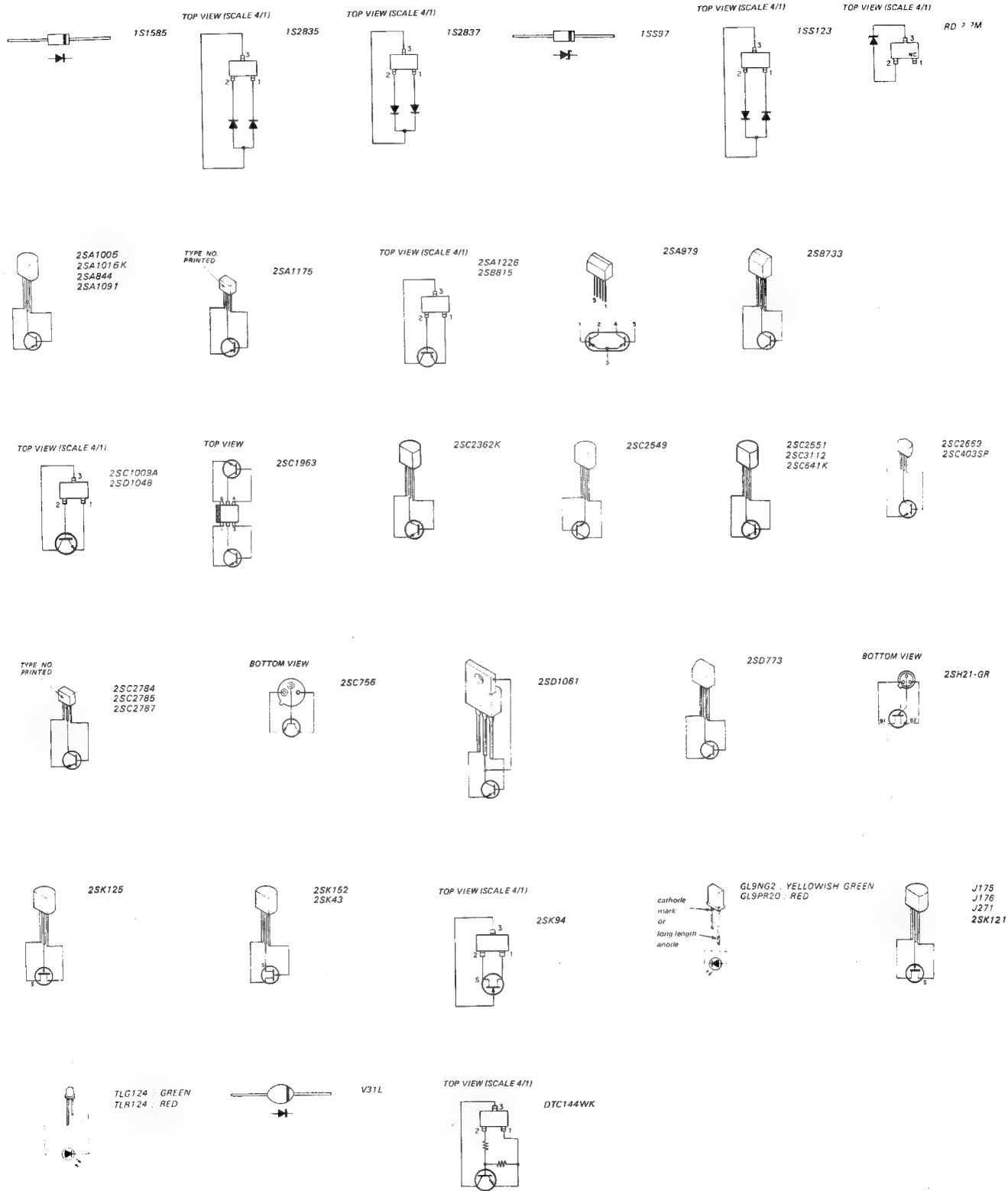
5-68(b)

**FRAME**

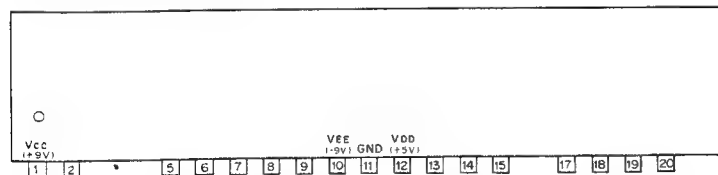
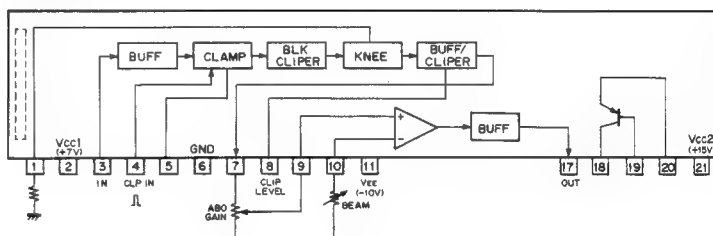
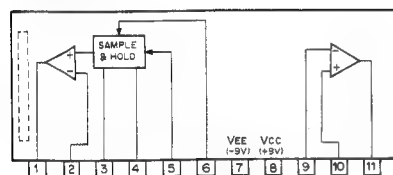
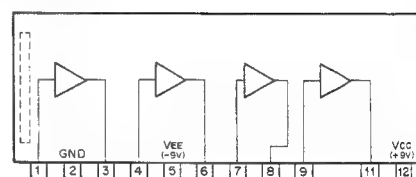
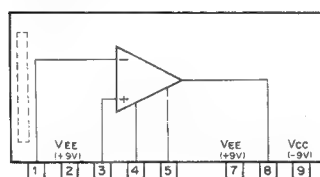
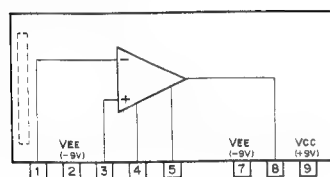
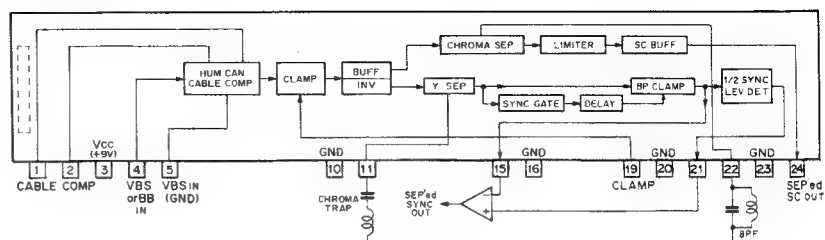
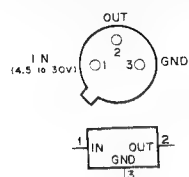




### 5-3. SEMICONDUCTOR

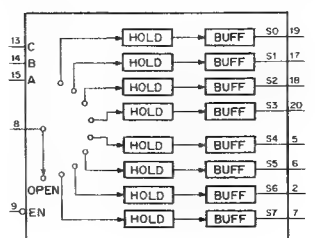


C

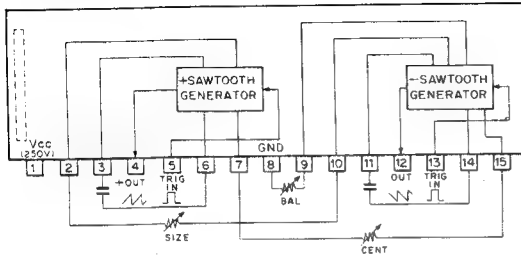


EN	C	B	A	"ON" CHANNEL
0	0	0	0	S0
0	0	0	1	S1
0	0	1	0	S2
0	0	1	1	S3
0	1	0	0	S4
0	1	0	1	S5
0	1	1	0	S6
0	1	1	1	S7
1	X	X	X	OPEN

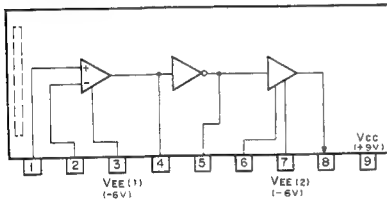
0: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE



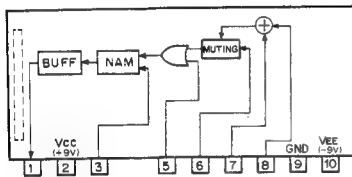
**BX1277 (SONY)**  
POSITIVE/NEGATIVE DEFLECTION PULSE GENERATOR  
— REAR VIEW —



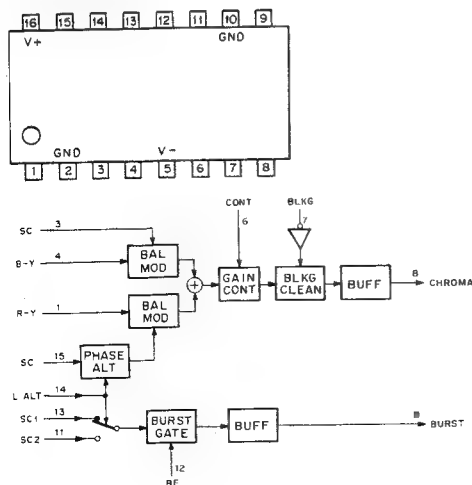
**BX315 (SONY)**  
VIDEO OUTPUT AMPLIFIER (PHASE INVERTED)  
— REAR VIEW —



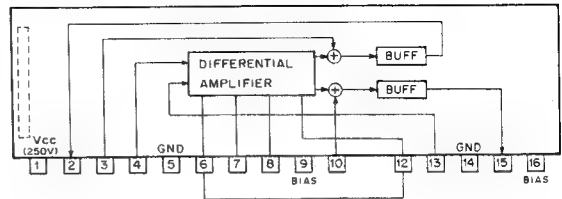
**BX3933 (SONY)**  
— REAR VIEW —



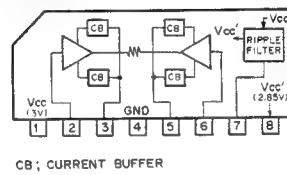
**CX22017 (SONY)**  
VIDEO SIGNAL PROCESSOR  
— TOP VIEW —



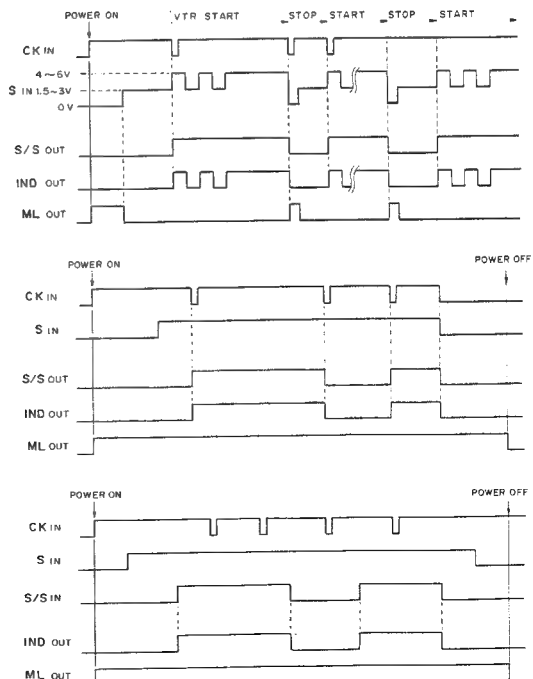
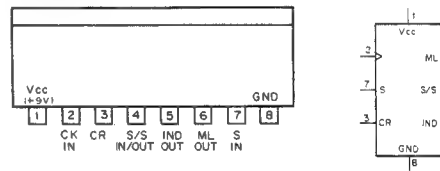
**BX1278 (SONY)**  
REGISTRATION CORRECTOR  
— REAR VIEW —



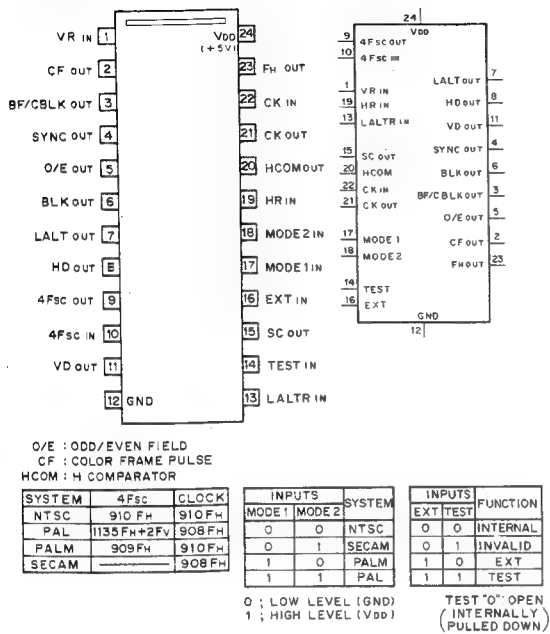
**CX184 (SONY)**  
AUDIO POWER AMP/RIPPLE FILTER  
— SIDE VIEW —



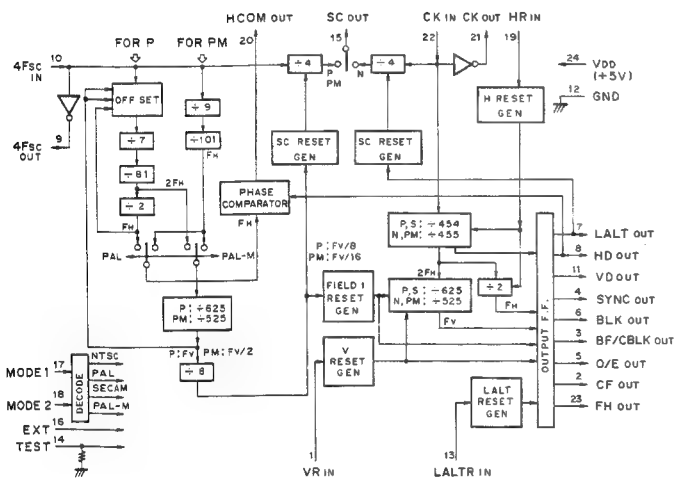
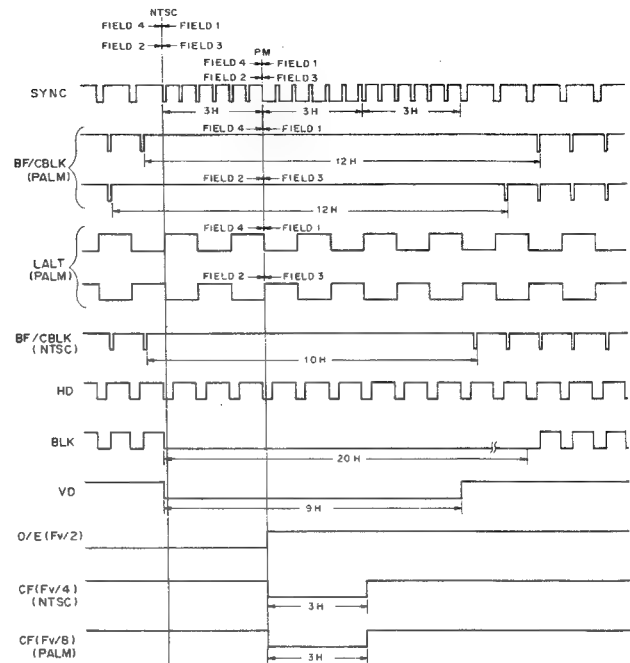
**CX518 (SONY)**  
INTERFACE CIRCUIT BETWEEN VTR AND CAMERA  
— SIDE VIEW —



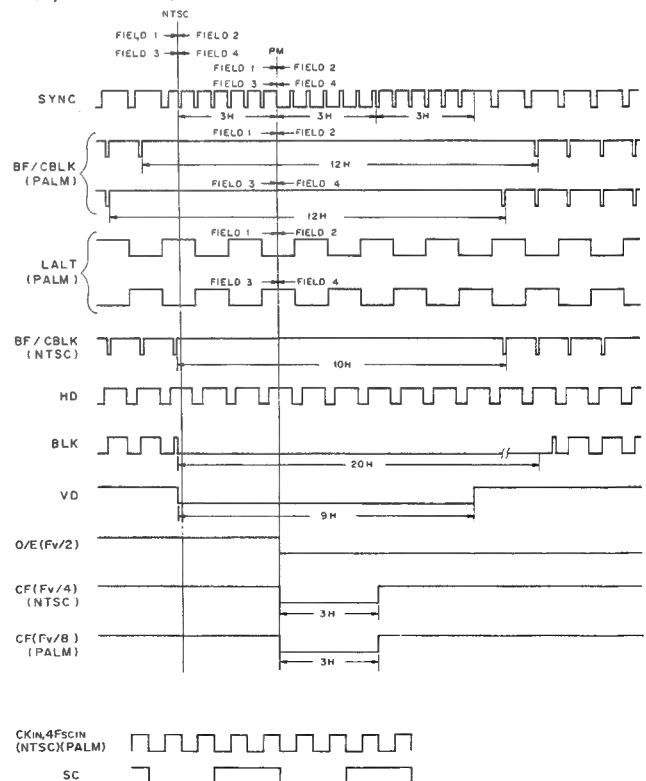
CX773A (SONY)  
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)  
— TOP VIEW —



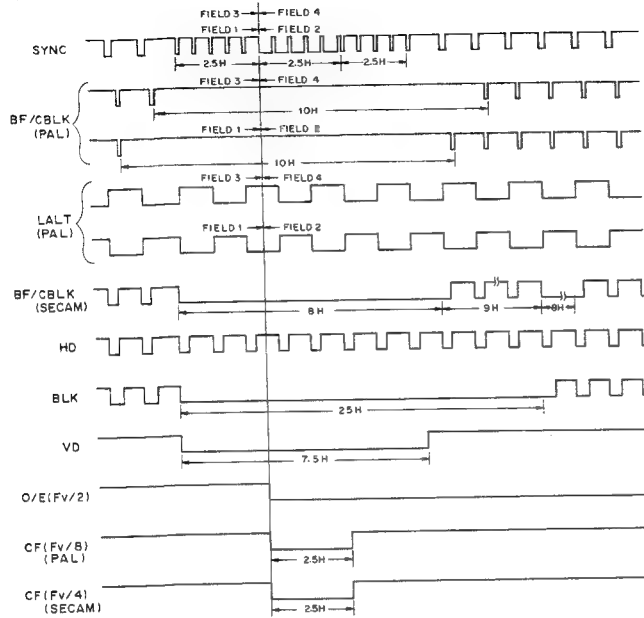
NTSC, PAL-M (FIELD 1,3)



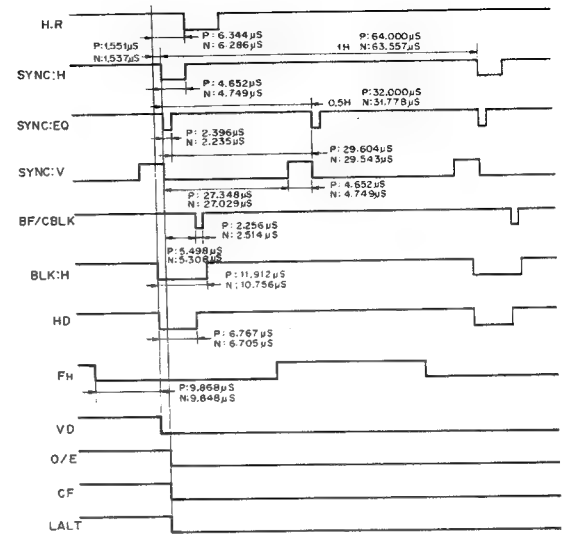
NTSC, PAL-M (FIELD 2,4)



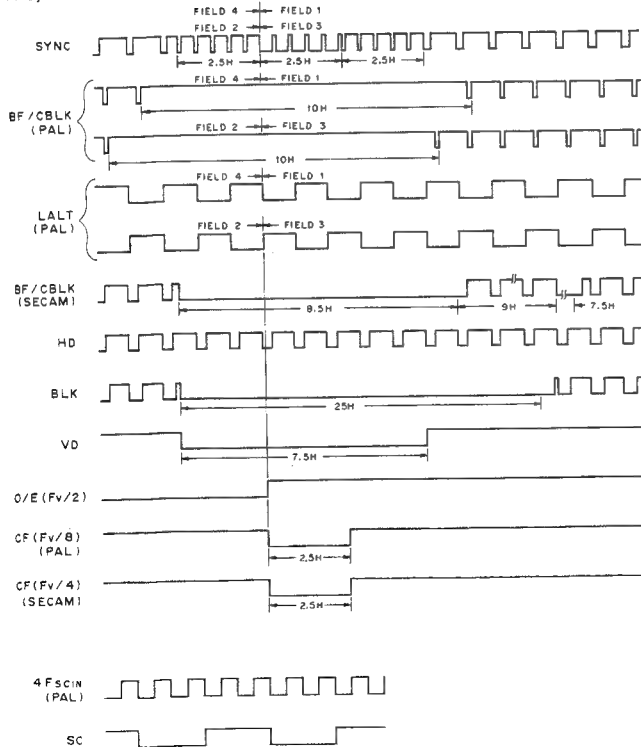
PAL, SECAM (FIELD 4, 2)



P: PAL, SECAM  
N: NTSC, PALM

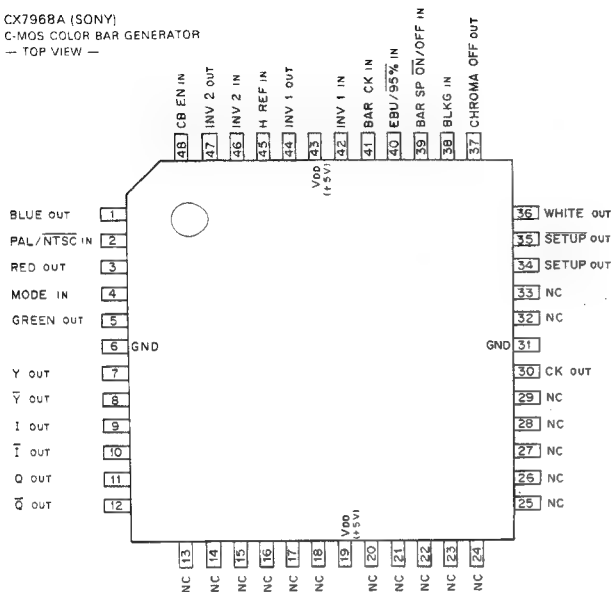


PAL, SECAM (FIELD 1, 3)





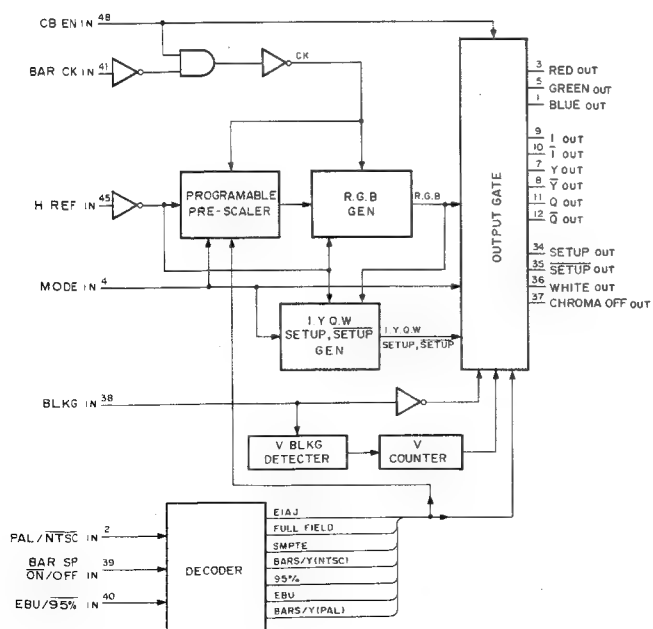
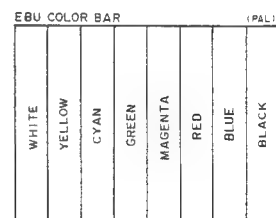
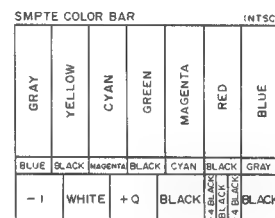
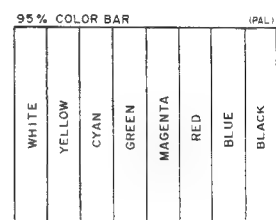
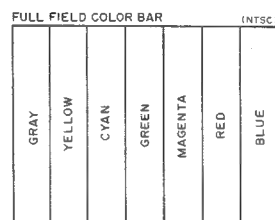
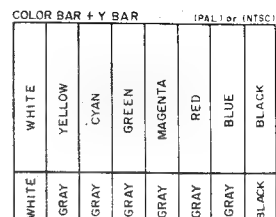
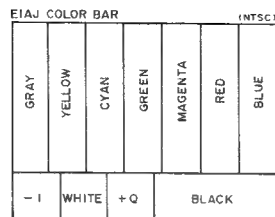
CX7968A (SONY)  
C-MOS COLOR BAR GENERATOR  
— TOP VIEW —



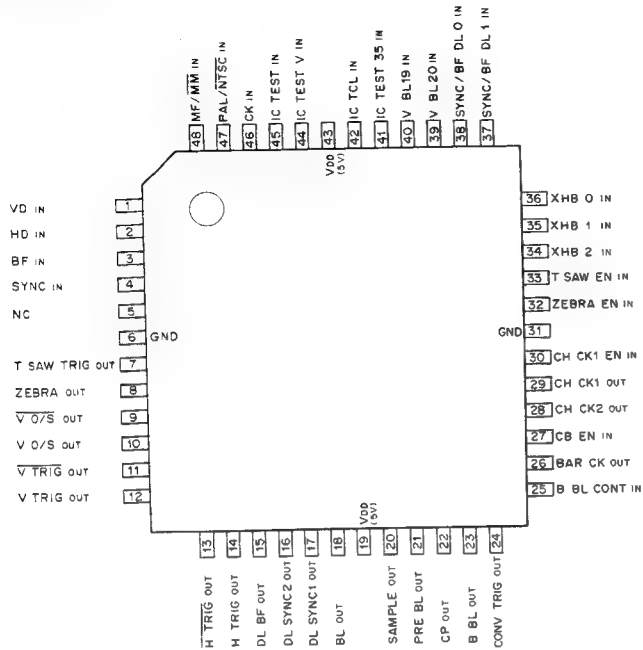
INPUT				FUNCTION	
PAL/NTSC	MODE	EBU/95%	BAR SP		
0	0	0	0	0	EIAJ COLOR BAR
0	0	0	1	0	FULL FIELD COLOR BAR
0	0	1	0	0	INHIBIT
0	0	1	1	0	INHIBIT
0	1	0	0	0	EIAJ COLOR BAR
0	1	0	1	0	FULL FIELD COLOR BAR
0	1	1	0	0	SMPTE COLOR BAR
0	1	1	1	0	COLOR BAR + Y BAR
1	0	0	0	0	95% COLOR BAR
1	0	0	1	0	INHIBIT
1	0	1	0	0	EBU COLOR BAR
1	0	1	1	0	INHIBIT
1	1	0	0	0	95% COLOR BAR
1	1	0	1	0	COLOR BAR + Y BAR
1	1	1	0	0	EBU COLOR BAR
1	1	1	1	0	INHIBIT

0, LOW LEVEL  
1, HIGH LEVEL

O COLOR BAR PATTERN



CX7969 (SONY)  
C-MOS PULSE GENERATOR  
— TOP VIEW —



## 1. SYSTEM DESIGNATION

INPUT	SYSTEM
PAL/NTSC IN	
1	PAL, SECAM
0	NTSC, PALM

## 2. TYPE OF TUBE

INPUT	FUNCTION
MF/MM IN	
1	MAG-STA TUBE
0	MAG-MAG TUBE

## 3. V BLKG WIDTH (NTSC ONLY)

INPUT	V BLKG WIDTH
V BL 19 V BL 20	
1 X	19H
0 0	20H
0 1	21H

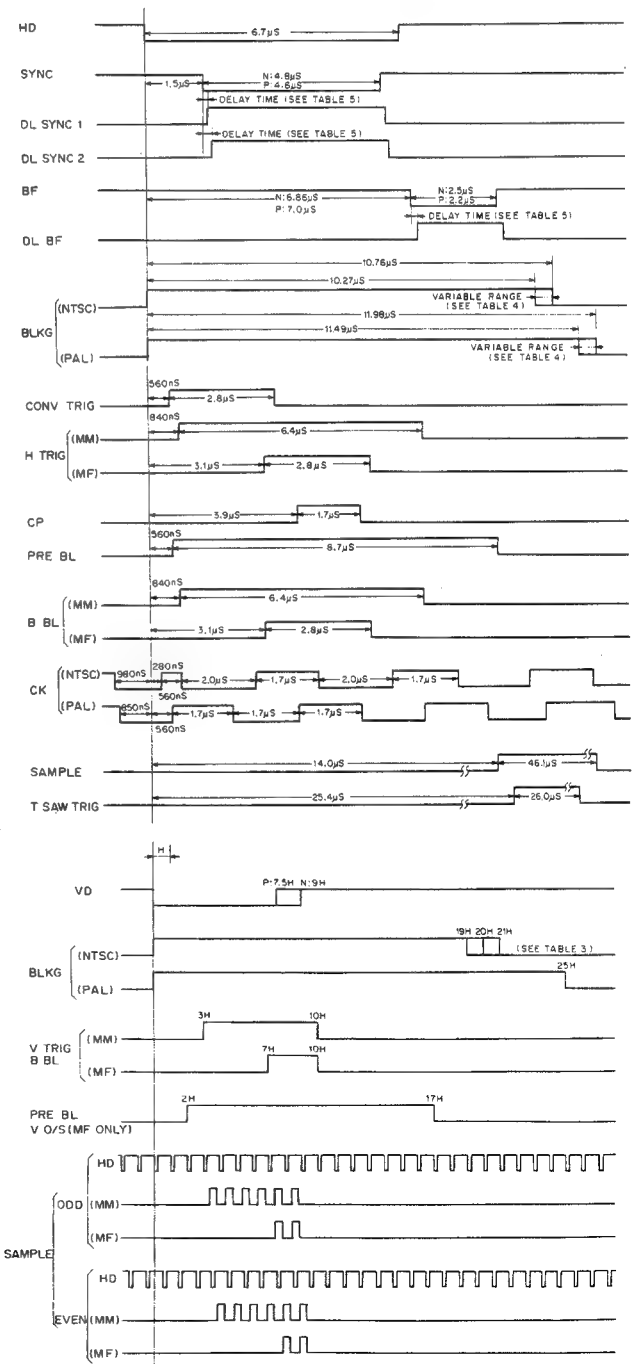
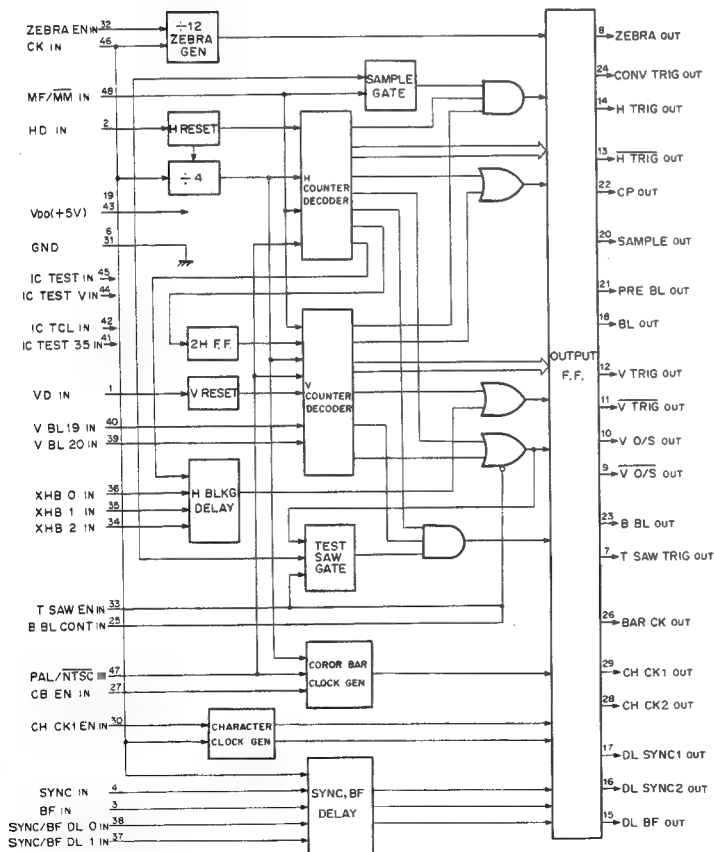
## 4. H BLKG WIDTH

INPUT	BLKG WIDTH [μS]
XHB2 XHB1 XHB0	
1 1 1	10.27 NTSC 11.49 PAL
1 1 0	10.34 11.56
1 0 1	10.41 11.63
1 0 0	10.48 11.70
0 1 1	10.55 11.77
0 1 0	10.62 11.84
0 0 1	10.69 11.91
0 0 0	10.76 11.98

## 5. DELAY TIME

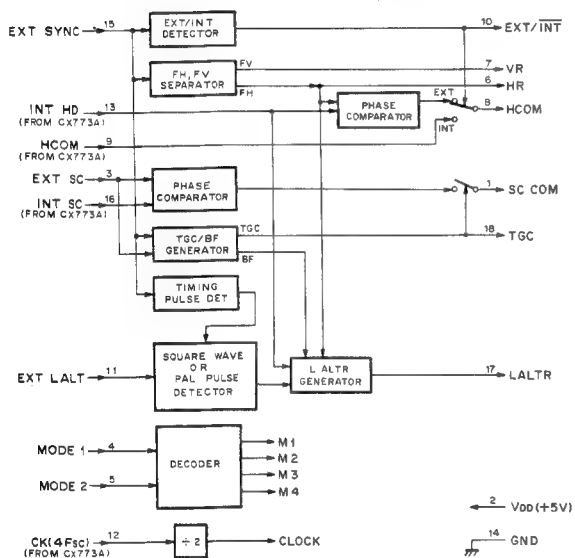
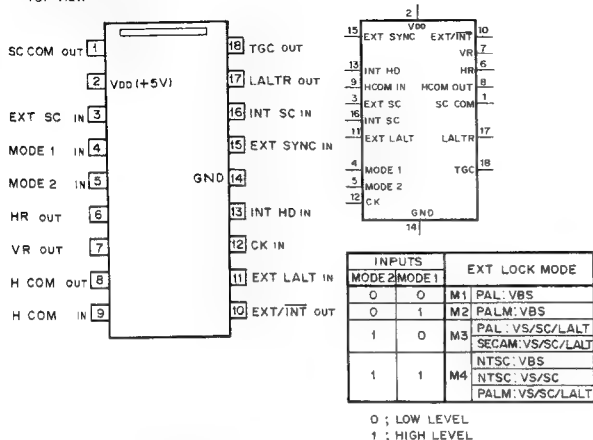
INPUT	DELAY TIME (nS)
SYNC/BF DL1 SYNC/BF DL2	
1 1	140 210 140
1 0	210 280 210
0 1	630 700 630
0 0	700 770 700

1; HIGH LEVEL  
0; LOW LEVEL  
X; DON'T CARE

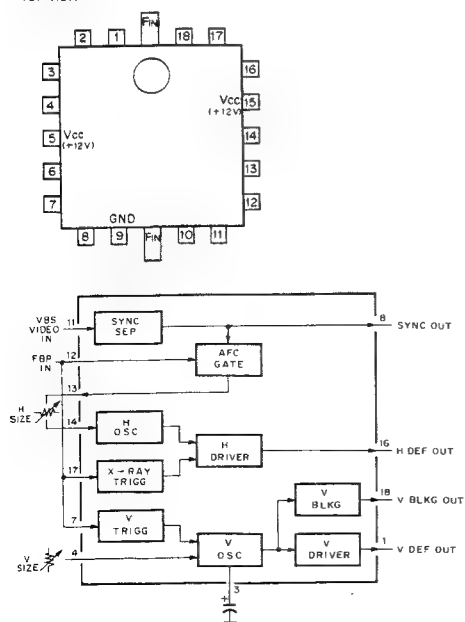


C

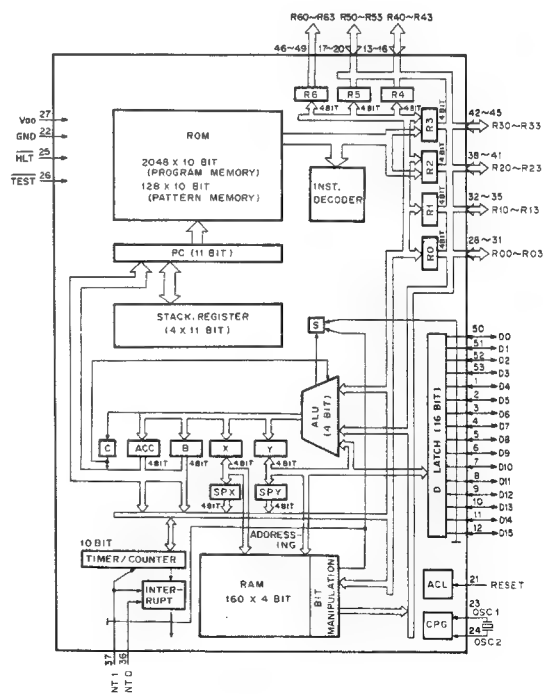
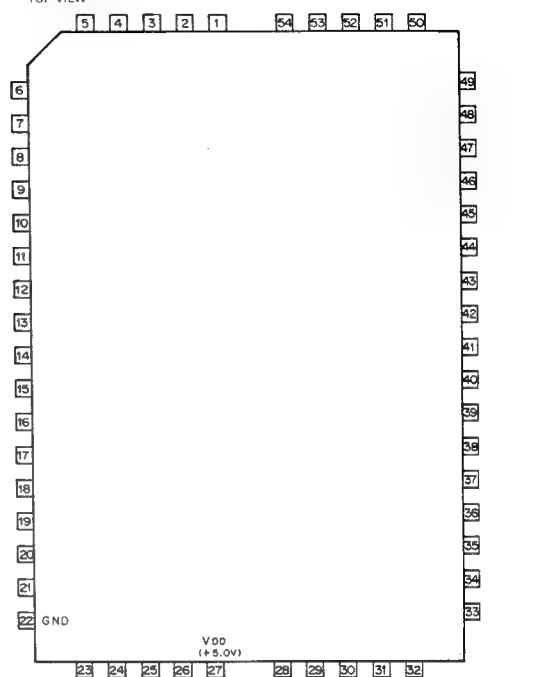
CX7903 (SONY)  
C-MOS GENLOCK DRIVER FOR CX773A  
— TOP VIEW —



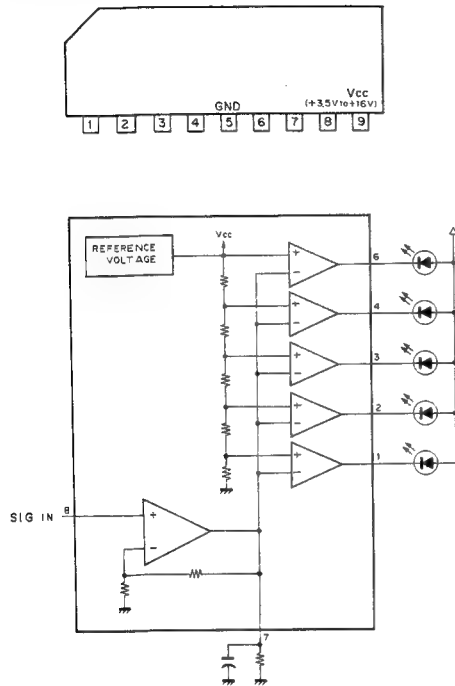
HA11423MP (HITACHI) FLAT PACKAGE  
TV/H/V SYNC SIGNAL PROCESSOR  
— TOP VIEW —



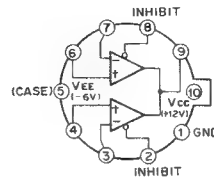
HD44820B27 (HITACHI) FLAT PACKAGE  
C-MOS 4-BIT MICROPROCESSOR  
— TOP VIEW —



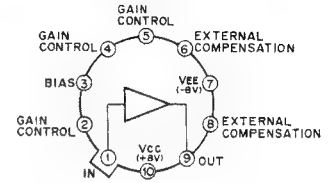
LB1423N (SANYO)  
LED DRIVER FOR AC/DC LEVEL METER  
— SIDE VIEW —



LM711CH (NS)  
DUAL DIFFERENTIAL VOLTAGE COMPARATOR  
— BOTTOM VIEW —



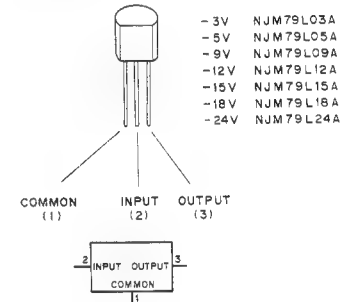
MC1454G (MOTOROLA)  
POWER AMPLIFIER (1W)  
— BOTTOM VIEW —



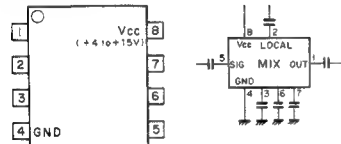
NJM78L? ?A (JRC)  
VOLTAGE REGULATOR



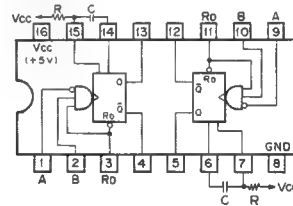
NJM79L? ?A (JRC)  
NEGATIVE VOLTAGE REGULATOR (40mA)  
— FRONT VIEW —



SN16913P (TI)  
BALANCED MIXER  
— TOP VIEW —



SN74LS123N (TI)  
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET  
— TOP VIEW —



INPUTS	OUTPUTS
R <sub>D</sub> A B Q Q̄	
0 X X 0 1	
X 1 X 0 1	
X X 0 0 1	
1 0 1 0 1	
1 1 1 1 1	
1 0 1 1 1	

0; LOW LEVEL  
1; HIGH LEVEL  
X; DON'T CARE

OUTPUT PULSE WIDTH

$$T_w = 0.28 \left( 1 + \frac{200}{R} \right) CR$$

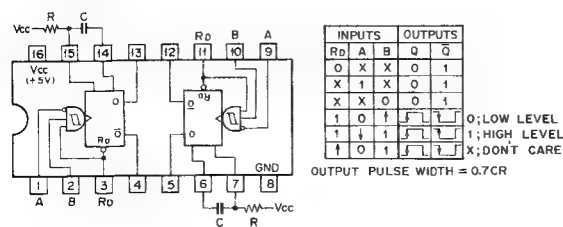
$$T_w = 0.33 \left( 1 + \frac{200}{R} \right) CR$$

$$T_w = 0.25 \left( 1 + \frac{200}{R} \right) CR$$

$$T_w = 0.29 \left( 1 + \frac{200}{R} \right) CR$$

$$T_w = 0.45 CR$$

SN74LS221N (TI)  
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT  
— TOP VIEW —

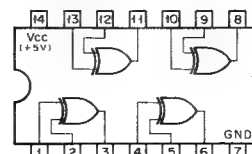


INPUTS	OUTPUTS
R <sub>D</sub> A B Q Q̄	
0 X X 0 1	
X 1 X 0 1	
X X 0 0 1	
1 0 1 0 1	
1 1 1 1 1	
1 0 1 1 1	

0; LOW LEVEL  
1; HIGH LEVEL  
X; DON'T CARE

OUTPUT PULSE WIDTH = 0.7CR

SN74LS86N (TI)  
TTL EXCLUSIVE OR GATE  
— TOP VIEW —

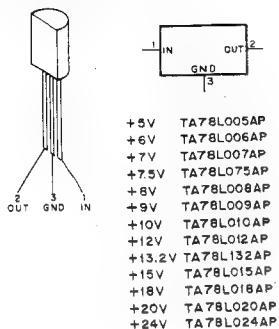


$$Y = A \oplus B = A \cdot \bar{B} + \bar{A} \cdot B$$

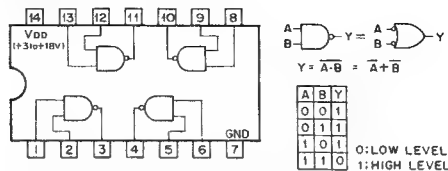
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0; LOW LEVEL  
1; HIGH LEVEL

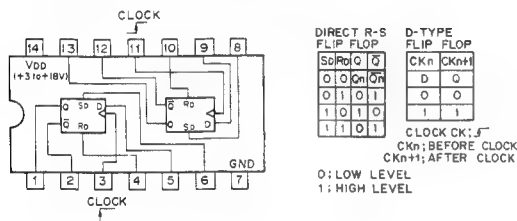
TA78L??AP (TOSHIBA)  
VOLTAGE REGULATOR



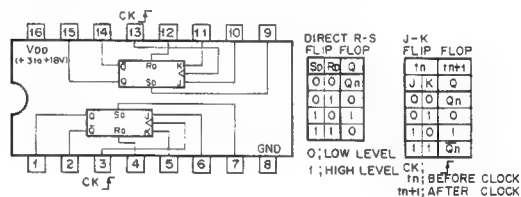
TC4011BP (TOSHIBA)  
C-MOS 2-INPUT NAND GATE  
— TOP VIEW —



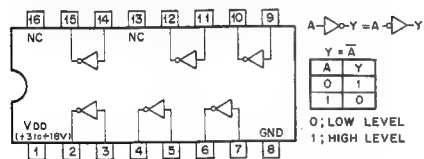
TC4013BF (TOSHIBA) FLAT PACKAGE  
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET  
— TOP VIEW —



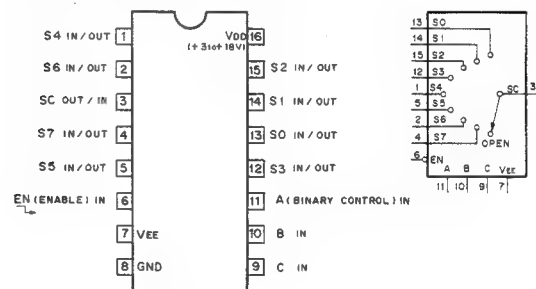
TC504027BF (TOSHIBA)  
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET  
— TOP VIEW —



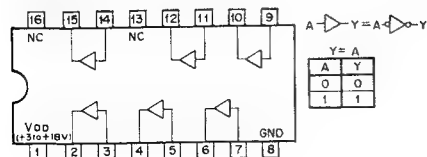
TC4049BF (TOSHIBA) FLAT PACKAGE  
C-MOS INVERTING TYPE BUFFER/CONVERTER  
— TOP VIEW —



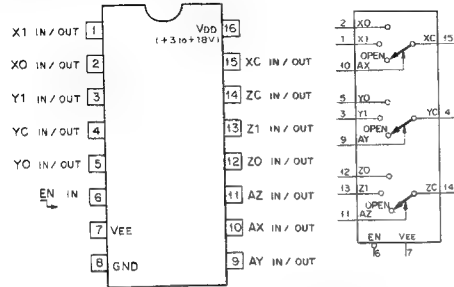
TC4051BF (TOSHIBA) FLAT PACKAGE  
C-MOS 8-CHANNEL MULTIPLEXER/DEMUTIPLEXER  
— TOP VIEW —



TC4050BF (TOSHIBA) FLAT PACKAGE  
C-MOS NON-INVERTING TYPE BUFFER/CONVERTER  
— TOP VIEW —



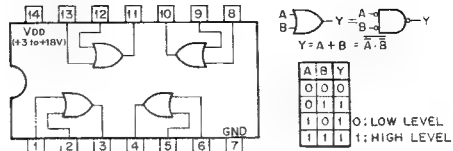
TC4053BF (TOSHIBA) FLAT PACKAGE  
TC4053BP (TOSHIBA)  
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER  
— TOP VIEW —



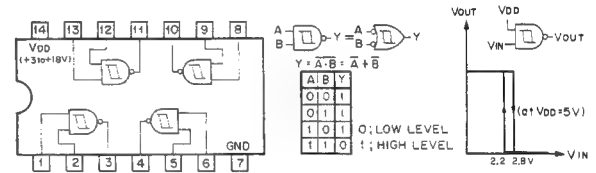
0: LOW LEVEL  
1: HIGH LEVEL  
X: DON'T CARE.

CONT. INPUTS	ON
EN: A (X,Y,Z)	CHANNEL
0	0
0	1
1	X
	OPEN

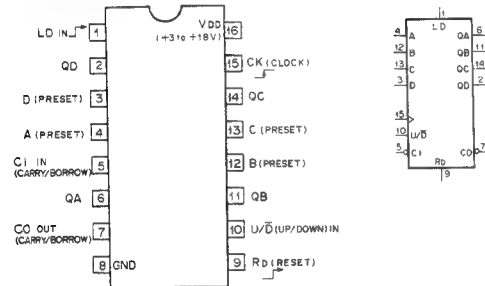
TC4071BF (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT OR GATE  
— TOP VIEW —



TC4093BF (TOSHIBA) FLAT PACKAGE  
C-MOS 2-INPUT NAND SCHMITT TRIGGER  
— TOP VIEW —



TC4516BF (TOSHIBA) FLAT PACKAGE  
uPD4516BC (NEC)  
C-MOS PRESETTABLE BINARY UP/DOWN COUNTER  
— TOP VIEW —



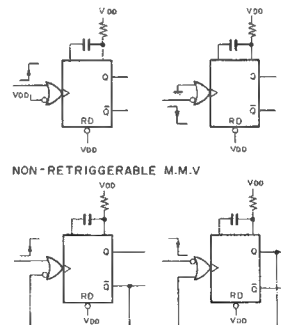
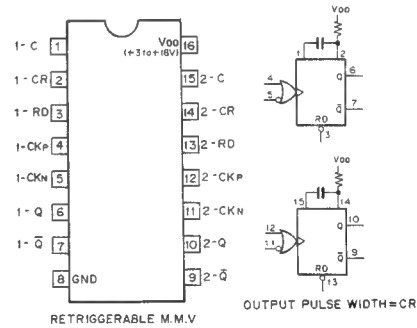
INPUTS					OUTPUTS			
CK	RD	LD	C1	U/D	QD	QC	QB	QA
X	1	X	X	X	0	0	0	0
X	0	1	X	X	SET TO A,B,C,D			
0	0	0	0	1	COUNT UP			
0	0	0	0	0	COUNT DOWN			
0	0	0	X	X	NO CHANGE			
X	0	0	1	X	NO CHANGE			

C0=L  
C1=L a(DOWN-COUNT "0" OR UP-COUNT "15")

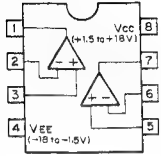
COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

↑ COUNT UP  
↓ COUNT DOWN

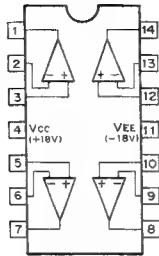
TC4538BF (TOSHIBA) FLAT PACKAGE  
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE  
MONOSTABLE MULTIVIBRATOR  
— TOP VIEW —



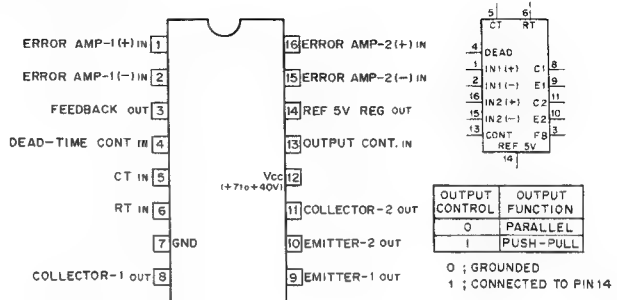
TL062CP (TI)  
TL062CPS (TI) FLAT PACKAGE  
OPERATIONAL AMPLIFIER  
(JFET INPUT)  
— TOP VIEW —



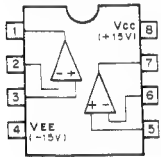
TL064CN (TI)  
TL064CNS (TI) FLAT PACKAGE  
OPERATIONAL AMPLIFIER  
(J FET-INPUT)  
— TOP VIEW —



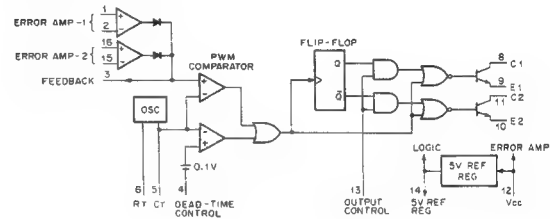
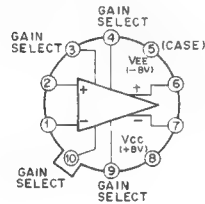
TL494CN (TI)  
PWM POWER CONTROL  
— TOP VIEW —



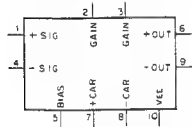
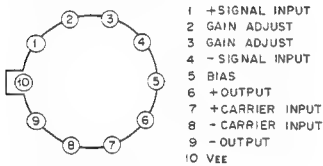
TL082CP (TI)  
OPERATIONAL AMPLIFIER  
(J FET-INPUT)  
— TOP VIEW —



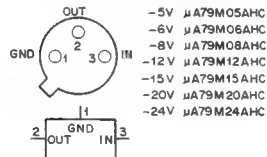
uA733HC (FSC)  
DIFFERENTIAL VIDEO AMPLIFIER  
— BOTTOM VIEW —



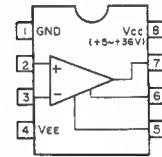
uA796HCA (FSC)  
DOUBLE-BALANCED MOD/DEMOD  
— BOTTOM VIEW —



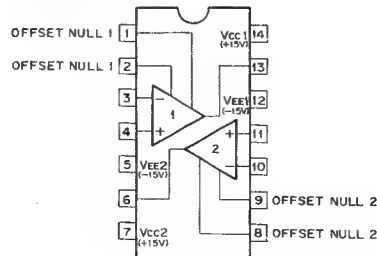
uA79M7AHC (FSC)  
NEGATIVE VOLTAGE REGULATOR (0.5A)  
— BOTTOM VIEW —



uPC311G2 (NEC) FLAT PACKAGE  
VOLTAGE COMPARATOR  
— TOP VIEW — uPC311C




uPC454D (NEC)  
OPERATIONAL AMPLIFIER  
— TOP VIEW —



## SECTION 6 SPARE PARTS

### 6-1. PARTS INFORMATION

#### 1. Safety Related Component Warning

Components identified by shading and -mark on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

2. Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".

- This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
- Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.



#### 5. Abbreviation

REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION	REF. NO.	DESCRIPTION
<b>C</b>	CAPACITOR	<b>IC</b>	IC	<b>RV</b>	VARIABLE RESISTOR
<b>CN</b>	CONNECTOR	<b>L</b>	INDUCTOR	<b>S</b>	SWITCH
<b>CV</b>	VARIABLE CAPACITOR	<b>LV</b>	VARIABLE INDUCTOR	<b>T</b>	TRANSFORMER
<b>D</b>	DIODE	<b>Q</b>	TRANSISTOR	<b>TH</b>	THERMISTOR
<b>DL</b>	DELAY LINE	<b>R</b>	RESISTOR	<b>THP</b>	THERMISTOR (POSITIVE)
<b>FL</b>	FILTER	<b>RP</b>	RESISTOR BLOCK	<b>X</b>	OSCILLATOR



All capacitors are in micro farads unless otherwise specified.  
All inductors are in micro henries unless otherwise specified.  
All resistors are in ohms.


#### 6. Screw

##### TOTSU TYPE

	<b>B</b>	<b>BTP</b>
		
2.6x3	7-621-912-08	
2.6x5	7-621-912-28	
(BZn)	7-621-912-20	
2.6x6	7-621-912-30	
2.6x10	7-621-912-50	
3x4	7-686-622-09	
3x6	7-686-624-09	
3x8		7-687-614-14
3x16	7-686-629-09	
4x6	7-686-634-04	
(BZn)		7-686-634-09
4x16	7-686-639-09	

##### + TYPE

	<b>+K</b>	<b>+P</b>
		
2x2.5		7-627-553-27
2x4	7-627-452-28	7-627-553-47
(BZn)		7-627-553-48
2.6x4		7-627-556-38
2.6x12	7-621-592-30	
3x6	7-682-247-09	

	<b>BOLT, HEXAGON</b>
	
2.6x10	7-683-414-05
3x8	7-683-404-04



3, MICA

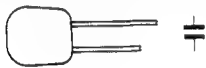
6-2. ELECTRICAL PARTS

Parts that are not listed in the "reference numbers order list" are shown in following table.  
Reference numbers are omitted.

CAPACITOR

SILVERED MICA CAPACITOR

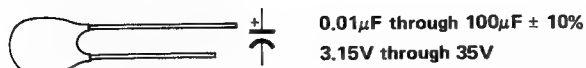
1 pF through 8.2 pF ±0.5 pF 500V  
10 pF through 680 pF ±5% 500V  
750 pF ±10% 500V



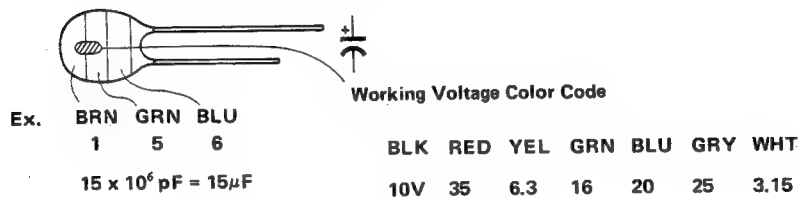
Parts No. 1-107-□□□-00							
Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 pF	019	12 pF	204	51 pF	164	220 pF	177
1.2	039	13	205	56	165	240	178
1.5	040	15	206	62	166	270	179
1.8	041	16	207	68	036	300	180
2.2	042	18	208	75	167	330	181
2.7	043	20	209	82	037	360	182
3.3	044	22	210	91	168	390	183
3.9	045	24	211	100	169	430	184
4.7	046	27	157	110	170	470	185
5.1	026	30	158	120	171	510	186
5.6	047	33	159	130	172	560	187
6.8	048	36	160	150	173	620	188
8.2	049	39	161	160	174	680	212
10	202	43	162	180	175	750	258
11	203	47	163	200	176		

# C, TANTALUM

## TANTALUM CAPACITOR



NOTE: The value of the parts that are marked by \* in the below table are indicated by color code, (to the value with  $\pm 20\%$ )



Parts No. 1-131-□□□-00

Value	Parts No. -□□□-
0.01μ	35V *396
0.015	35 *397
0.022	35 *398
0.033	35 *399
0.047	35 *400
0.068	35 *401
0.1	35 *402
0.15	35 *403
0.22	35 *404
0.33	25 *409
	35 *405
0.47	20 *412
	35 *406
0.68	16 *415
	25 *410
	35 *407
1.0	10 *418
	20 *413

Value	Parts No. -□□□-
1.0μ	35V *408
1.5	6.3 *421
	16 *416
	25 *411
	35 348
2.2	3.15 *424
	10 *419
	20 *414
	25 355
	35 349
3.3	6.3 *422
	16 *417
	20 362
	25 356
	35 350
4.7	3.15 *425
	10 *420
	16 369

Value	Parts No. -□□□-
4.7μ	20V 363
	25 357
	35 351
6.8	6.3 *423
	10 376
	16 370
	20 364
	25 358
	35 352
10	3.15 *426
	6.3 383
	10 377
	16 371
	20 365
	25 359
	35 353
15	3.15 390
	6.3 384

Value	Parts No. -□□□-
15μ	10V 378
	16 372
	20 366
	25 360
22	3.15 391
	6.3 385
	10 379
	16 373
	20 367
33	3.15 392
	6.3 386
	10 380
	16 374
47	3.15 393
	6.3 387
	10 381
68	3.15 394
	6.3 388
100	3.15 395

# CERAMIC CHIP

## CERAMIC CAPACITOR



47PF through 0.15μF 50V

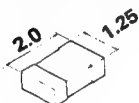
Parts No. 1-161-□□□-00

Value	Parts No. -□□□-
47P 5%	855
51P 5%	476
56P 5%	477
62P 5%	478
68P 5%	457
75P 5%	479
82P 5%	458
91P 5%	480
100P 5%	459
120P 5%	460
150P 5%	461

Value	Parts No. -□□□-
180P 5%	462
220P 5%	463
270P 5%	464
330P 5%	465
390P 5%	466
470P 5%	467
560P 5%	468
680P 5%	469
820P 5%	470
0.001μ 10%	471

Value	Parts No. -□□□-
0.0015μ 10%	852
0.0022μ 10%	853
0.0033μ 10%	854
0.0047μ 10%	472
0.01μ 10%	473
0.022μ 10%	474
0.033μ 10%	475
0.047μ 10%	481
0.068μ 10%	482
0.1μ 10%	483
0.15μ 10%	484

## CHIP CERAMIC CAPACITOR



220pF through 0.018μF(B) ± 10% 50WV

0.022μF through 0.068μF(F) <sup>+80</sup> % 50WV  
<sub>-20</sub>

0.1μF(F) <sup>+80</sup> % 25WV  
<sub>-20</sub>

Parts No. 1-163-□□□-00

Value	Parts No. -□□□-
100pF	—
120	—
150	—
180	—
220	001
270	002
330	003
390	004
470	005
560	006
680	007
820	008

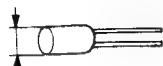
Value	Parts No. -□□□-
0.001μF	009
0.0012	010
0.0015	011
0.0018	012
0.0022	013
0.0027	014
0.0033	015
0.0039	016
0.0047	017
0.0056	018
0.0068	019
0.0082	020

Value	Parts No. -□□□-
0.01μF	021
0.012	022
0.015	023
0.018	024
0.022	033
0.027	—
0.033	034
0.039	—
0.047	035
0.056	—
0.068	036
0.082	—
0.1	038

## INDUCTOR

### MICRO INDUCTOR

1  $\mu$ H through 470  $\mu$ H  
 $\pm 5\%$



5mm dia

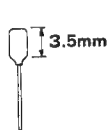
Parts No. 1-407-□□□-XX

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1 $\mu$ H	178	4.7 $\mu$ H	186	22 $\mu$ H	161	100 $\mu$ H	169
1.2	179	5.6	187	27	162	120	170
1.5	180	6.8	188	33	163	150	171
1.8	181	8.2	189	39	164	180	172
2.2	182	10	157	47	165	220	173
2.7	183	12	158	56	166	270	174
3.3	184	15	159	68	167	330	175
3.9	185	18	160	82	168	390	176
						470	177

## RESISTOR

### METAL FILM RESISTOR

4.5mm



$\pm 1\%$ , 1/8W  
10 $\Omega$  through 33 k $\Omega$

Parts No. 1-214-□□□-00

Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
10 $\Omega$	509	100 $\Omega$	533	1.0k $\Omega$	557	10k $\Omega$	581
11	510	110	534	1.1	558	11	582
12	511	120	535	1.2	559	12	583
13	512	130	536	1.3	560	13	584
15	513	150	537	1.5	561	15	585
16	514	160	538	1.6	562	16	586
18	515	180	539	1.8	563	18	587
20	516	200	540	2.0	564	20	588
22	517	220	541	2.2	565	22	589
24	518	240	542	2.4	566	24	590
27	519	270	543	2.7	567	27	591
30	520	300	544	3.0	568	30	592
33	521	330	545	3.3	569	33	593
36	522	360	546	3.6	570		
39	523	390	547	3.9	571		
43	524	430	548	4.3	572		
47	525	470	549	4.7	573		
51	526	510	550	5.1	574		
56	527	560	551	5.6	575		
62	528	620	552	6.2	576		
68	529	680	553	6.8	577		
75	530	750	554	7.5	578		
82	531	820	555	8.2	579		
91	532	910	556	9.1	580		

1, CARBON

CARBON RESISTOR (1/6W)

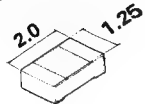
±5%, 1/6W, non-special type  
2.2Ω through 1MΩ



Parts No. 1-247-□□□-00							
Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-	Value	Parts No. -□□□-
1Ω	—	36Ω	796	1.2kΩ	833	43kΩ	870
1.1	—	39	797	1.3	834	47	871
1.2	—	43	798	1.5	835	51	872
1.3	—	47	799	1.6	836	56	873
1.5	—	51	800	1.8	837	62	874
1.6	—	56	801	2	838	68	875
1.8	—	62	802	2.2	839	75	876
2	—	68	803	2.4	840	82	877
2.2	767	75	804	2.7	841	91	878
2.4	768	82	805	3	842	100kΩ	879
2.7	769	91	806	3.3	843	110	880
3	770	100Ω	807	3.6	844	120	881
3.3	771	110	808	3.9	845	130	882
3.6	772	120	809	4.3	846	150	883
3.9	773	130	810	4.7	847	160	884
4.3	774	150	811	5.1	848	180	885
4.7	775	160	812	5.6	849	200	886
5.1	776	180	813	6.2	850	220	887
5.6	777	200	814	6.8	851	240	888
6.2	778	220	815	7.5	852	270	889
6.8	779	240	816	8.2	853	300	890
7.5	780	270	817	9.1	854	330	891
8.2	781	300	818	10kΩ	855	360	892
9.1	782	330	819	11	856	390	893
10Ω	783	360	820	12	857	430	894
11	784	390	821	13	858	470	895
12	785	430	822	15	859	510	896
13	786	470	823	16	860	560	897
15	787	510	824	18	861	620	898
16	788	560	825	20	862	680	899
18	789	620	826	22	863	750	900
20	790	680	827	24	864	820	901
22	791	750	828	27	865	910	902
24	792	820	829	30	866	1MΩ	903
27	793	910	830	33	867		
30	794	1kΩ	831	36	868		
33	795	1.1	832	39	869		

# R, CHIP CARBON

## CHIP RESISTOR



±5% 1/10W  
0Ω through 3.3MΩ

Parts No. 1-216-□□□-00

Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -	Value	Parts No. - □□□ -
0Ω	295	30	012	910	048	30	084	910	120
1Ω	—	33Ω	013	1kΩ	049	33kΩ	085	1MΩ	121
1.1	—	36	014	1.1	050	36	086	1.1	122
1.2	—	39	015	1.2	051	39	087	1.2	123
1.3	—	43	016	1.3	052	43	088	1.3	124
1.5	—	47	017	1.5	053	47	089	1.5	125
1.6	—	51	018	1.6	054	51	090	1.6	126
1.8	—	56	019	1.8	055	56	091	1.8	127
2	—	62	020	2	056	62	092	2	128
2.2	298	68	021	2.2	057	68	093	2.2	129
2.4	301	75	022	2.4	058	75	094	2.4	130
2.7	302	82	023	2.7	059	82	095	2.7	131
3	303	91	024	3	060	91	096	3	132
3.3	304	100Ω	025	3.3	061	100kΩ	097	3.3	133
3.6	305	110	026	3.6	062	110	098		
3.9	306	120	027	3.9	063	120	099		
4.3	307	130	028	4.3	064	130	100		
4.7	308	150	029	4.7	065	150	101		
5.1	297	160	030	5.1	066	160	102		
5.6	309	180	031	5.6	067	180	103		
6.2	310	200	032	6.2	068	200	104		
6.8	311	220	033	6.8	069	220	105		
7.5	312	240	034	7.5	070	240kΩ	106		
8.2	313	270	035	8.2	071	270	107		
9.1	314	300	036	9.1	072	300	108		
10Ω	001	330	037	10kΩ	073	330	109		
11	002	360	038	11	074	360	110		
12	003	390	039	12	075	390	111		
13	004	430	040	13	076	430	112		
15	005	470	041	15	077	470	113		
16	006	510	042	16	078	510	114		
18	007	560	043	18	079	560	115		
20	008	620	044	20	080	620	116		
22	009	680	045	22	081	680	117		
24	010	750	046	24	082	750	118		
27	011	820	047	27	083	820	119		

**AT-16/16N**

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
AT-16/16N BOARD			D1	8-719-815-55	1S1555
	A-7513-046-A	MOUNTED CIRCUIT BOARD	D2	8-719-815-55	1S1555
		"AT-16"	D3	8-719-100-03	1S2835
	A-7513-071-A	MOUNTED CIRCUIT BOARD	D4	8-719-815-55	1S1555
		"AT-16N"	D5	8-719-815-55	1S1555
			D6	8-719-815-55	1S1555
			D7	8-719-101-34	RD3.0EL1
C4	1-163-259-00	CERAMIC CHIP 220P 5% 50V	D8	8-719-101-60	RD6.2EL1
C5	1-163-259-00	CERAMIC CHIP 220P 5% 50V	D9	8-719-815-55	1S1555
C7	1-131-341-00	TANTALUM 0.1 10% 35V	D10	8-719-815-55	1S1555
C12	1-124-169-00	ELECT 100 20% 10V			
C13	1-131-375-00	TANTALUM 0.22 10% 10V	D11	8-719-100-03	1S2835
C14	1-163-109-00	CERAMIC CHIP 47P 5% 50V	D12	8-719-815-55	1S1555
C16	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D13	8-719-815-55	1S1555
			D14	8-719-100-03	1S2835
			D15	8-719-100-05	1S2837
C20	1-131-341-00	TANTALUM 0.1 10% 35V			
C24	1-163-113-00	CERAMIC CHIP 68P 5% 50V	D16	8-719-815-55	1S1555
C27	1-163-037-00	CERAMIC CHIP 0.022 10% 25V	D17	8-719-100-05	1S2837
C29	1-130-495-00	MYLAR 0.1 5% 50V	D18	8-719-100-05	1S2837
C32	1-131-343-00	TANTALUM 0.22 10% 35V	D19	8-719-108-13	1S955
C34	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D20	8-719-108-13	1S955
C35	1-163-251-00	CERAMIC CHIP 100P 5% 50V			
			D22	8-719-815-55	1S1555
C36	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D23	8-719-101-98	1SS97
C37	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D24	8-719-101-63	RD6.8EL1
C38	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D25	8-719-105-91	RD5.6MB2
C42	1-163-141-00	CERAMIC CHIP 0.001 5% 50V	D26	8-719-100-03	1S2835
C49	1-163-251-00	CERAMIC CHIP 100P 5% 50V			
			D28	8-719-100-05	1S2837
C50	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D29	8-719-100-03	1S2835
C51	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D30	8-719-100-03	1S2835
C52	1-163-251-00	CERAMIC CHIP 100P 5% 50V	D31	8-719-100-05	1S2837
C72	1-131-347-00	TANTALUM 1 10% 35V	D32	8-719-100-05	1S2837
C77	1-124-271-00	ELECT 1 20% 50V			
C78	1-124-270-11	ELECT 0.47 20% 50V			
			DL1	1-415-345-00	110nS
CN1	1-564-084-00	RECEPTACLE, 60P MALE			
	1-556-762-00	60P PLUG WITH HARNESS			
CN2	1-564-381-11	RECEPTACLE, 6P MALE	IC1	8-759-200-81	TC4053BF: TOSHIBA
	1-562-388-11	SOCKET CONNECTOR 6P	IC2	8-759-200-81	TC4053BF: TOSHIBA
			IC3	8-759-200-81	TC4053BF: TOSHIBA
			IC4	8-759-906-53	TL062CPS: TI
			IC5	8-759-101-12	μPC311G2: NEC
			IC6	8-759-200-85	TC4093BF: TOSHIBA
			IC7	8-759-200-81	TC4053BF: TOSHIBA
			IC8	8-759-200-79	TC4049BF: TOSHIBA
			IC9	8-759-200-79	TC4049BF: TOSHIBA
			IC10	8-759-200-81	TC4053BF: TOSHIBA

Ref.No.	Parts No.	Description
IC11	8-759-909-96	LM711CH: NS
IC12	8-759-969-13	SN16913P: TI
IC13	8-759-200-89	TC4516BF: TOSHIBA
IC14	8-759-205-78	TC504013BF: TOSHIBA
IC15	8-759-300-62	HD44820B27: HITACHI

IC16	8-741-117-90	BX1179: SONY
IC17	8-741-117-90	BX1179: SONY
IC18	8-759-200-81	TC4053BF: TOSHIBA
IC19	8-759-200-83	TC4071BF: TOSHIBA
IC20	8-759-906-54	TL064CNS: TI

IC21	8-759-200-79	TC4049BF: TOSHIBA
IC23	8-759-605-18	CX518: SONY
IC24	8-759-906-53	TL062CPS: TI
IC25	8-759-906-54	TL064CNS: TI
IC26	8-759-906-53	TL062CPS: TI

L1	1-408-417-21	MICRO 47
L2	1-408-417-21	MICRO 47
L3	1-408-417-21	MICRO 47

Q1	8-729-101-25	2SC1009A
Q2	8-729-101-25	2SC1009A
Q3	8-729-101-25	2SC1009A
Q4	8-729-101-25	2SC1009A
Q5	8-729-101-25	2SC1009A

Q6	8-729-109-44	2SK94
Q7	8-729-109-44	2SK94
Q8	8-729-101-25	2SC1009A
Q9	8-729-101-25	2SC1009A
Q10	8-729-101-25	2SC1009A

Q11	8-729-101-25	2SC1009A
Q12	8-729-122-63	2SA1226
Q13	8-729-122-63	2SA1226
Q14	8-729-101-25	2SC1009A
Q15	8-729-800-44	2SK152-4

Q16	8-729-122-63	2SA1226
Q17	8-729-101-25	2SC1009A
Q18	8-729-101-25	2SC1009A
Q19	8-729-101-25	2SC1009A
Q20	8-729-122-63	2SA1226

Q21	8-729-109-44	2SK94
Q22	8-729-122-63	2SA1226
Q23	8-729-101-25	2SC1009A
Q24	8-729-122-63	2SA1226
Q25	8-729-101-25	2SC1009A

Q26	8-729-101-25	2SC1009A
Q27	8-729-122-63	2SA1226
Q28	8-729-101-25	2SC1009A
Q29	8-729-101-25	2SC1009A
Q30	8-729-101-25	2SC1009A

Q31	8-729-101-25	2SC1009A
Q32	8-729-122-63	2SA1226
Q33	8-729-122-63	2SA1226
Q34	8-729-122-63	2SA1226
Q35	8-729-101-25	2SC1009A

Q36	8-729-101-25	2SC1009A
Q37	8-729-122-63	2SA1226
Q38	8-729-101-25	2SC1009A
Q39	8-729-101-25	2SC1009A
Q40	8-729-101-25	2SC1009A

Q41	8-729-800-68	2SB815
Q42	8-729-101-25	2SC1009A
Q43	8-729-101-25	2SC1009A
Q44	8-729-101-25	2SC1009A
Q45	8-729-101-25	2SC1009A

Q46	8-729-122-63	2SA1226
Q47	8-729-101-25	2SC1009A
Q48	8-729-122-63	2SA1226
Q49	8-729-109-44	2SK94
Q50	8-729-800-36	2SD1048

Q51	8-729-101-25	2SC1009A
Q52	8-729-101-25	2SC1009A
Q54	8-729-101-25	2SC1009A
Q55	8-729-101-25	2SC1009A
Q56	8-729-101-25	2SC1009A

Q57	8-729-109-44	2SK94
Q58	8-729-109-44	2SK94
Q59	8-729-109-44	2SK94
Q60	8-729-109-44	2SK94
Q61	8-729-109-44	2SK94

Q63	8-729-109-44	2SK94
Q64	8-729-101-25	2SC1009A
Q65	8-729-101-25	2SC1009A

R31	1-215-458-00	METAL 36K 1% 1/6W
R33	1-215-481-00	METAL 330K 1% 1/6W
R111	1-215-465-00	METAL 68K 1% 1/6W
R154	1-247-696-11	CARBON 47 5% 1/4W



# T-16, CN-8, CN-9, CN-65, DF-23

Ref.No.	Parts No.	Description
RP1	1-231-387-00	RESISTOR, BLOCK

RV1	1-228-460-00	METAL 20K
RV2	1-228-457-00	METAL 2K

S4	1-554-076-00	SLIDE
S5	1-554-076-00	SLIDE

X1	1-527-532-00	400KHz
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## CN-8 BOARD

CN102	1-934-795-11	CCU-15PIN CONNECTOR WITH HARNESS
	1-561-897-00	RECEPTACLE, 15P FEMALE "CCU"

## CN-9 BOARD

A-7520-172-A	MOUNTED CIRCUIT BOARD "CN-9"
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CN1	1-564-154-00	RECEPTACLE, 14P
CN2	1-564-379-11	RECEPTACLE, 3P

D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555

R1	1-215-493-00	METAL 1M 1% 1/6W
R2	1-215-493-00	METAL 1M 1% 1/6W
R3	1-215-493-00	METAL 1M 1% 1/6W

TM1	1-548-119-21	TIMER
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Ref.No.	Parts No.	Description
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## CN-65 BOARD

1-608-897-13	PRINTED CIRCUIT BOARD "CN-65"
(BVP-30(UC) . . . . . S/N UP TO 20280)	
(BVP-30(J) . . . . . S/N UP TO 10160)	
(BVP-30(P) . . . . . S/N UP TO 30110)	

1-608-897-14	PRINTED CIRCUIT BOARD "CN-65"
(BVP-30(UC) . . . . . S/N 20281 AND HIGHER)	
(BVP-30(J) . . . . . S/N 10161 AND HIGHER)	
(BVP-30(P) . . . . . S/N 30111 AND HIGHER)	

CN1	1-562-221-00	RECEPTACLE, 12P FEMALE "LENS"
	1-561-171-00	PLUG HOOSING 12P
	1-560-768-00	PLUG CONTACT
	1-568-944-00	INDEX PIN

## DF-23 BOARD

A-7513-054-A	MOUNTED CIRCUIT BOARD "DF-23"
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C1	1-130-802-00	MYLAR 0.022 400V
C2	1-124-561-21	ELECT 3.3 20% 250V
C4	1-123-380-00	ELECT 1 20% 100V
C6	1-108-371-00	MYLAR 0.0033 10% 100V
C7	1-130-814-00	POLYESTER 0.01 5% 630V

C8	1-123-380-00	ELECT 1 20% 100V
C9	1-124-624-11	ELECT 1 200V
C10	1-130-814-00	POLYESTER 0.01 5% 630V
C11	1-131-347-00	TANTALUM 1 10% 35V
C12	1-161-894-00	CERAMIC 0.1 50V

C13	1-131-347-00	TANTALUM 1 10% 35V
C14	1-161-894-00	CERAMIC 0.1 50V
C15	1-123-383-00	ELECT 4.7 20% 100V
C16	1-131-341-00	TANTALUM 0.1 10% 35V
C17	1-131-341-00	TANTALUM 0.1 10% 35V

C18	1-123-384-00	ELECT 10 20% 100V
C19	1-123-384-00	ELECT 10 20% 100V
C20	1-131-341-00	TANTALUM 0.1 10% 35V
C21	1-131-341-00	TANTALUM 0.1 10% 35V
C22	1-124-561-21	ELECT 3.3 20% 250V

C28	1-123-354-00	ELECT 3.3 20% 50V
C29	1-123-354-00	ELECT 3.3 20% 50V
C31	1-131-347-00	TANTALUM 1 10% 35V
C32	1-161-894-00	CERAMIC 0.1 50V
C33	1-131-347-00	TANTALUM 1 10% 35V

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
C34	1-161-894-00	CERAMIC 0.1 50V	Q1	8-729-177-55	2SA1175
C35	1-123-380-00	ELECT 1 20% 100V	Q2	8-729-200-17	2SA1091
C36	1-123-380-00	ELECT 1 20% 100V	Q3	8-729-255-12	2SC2551
C37	1-123-384-00	ELECT 10 20% 100V	Q4	8-729-255-12	2SC2551
C38	1-123-384-00	ELECT 10 20% 100V	Q5	8-729-200-17	2SA1091
C49	1-123-380-00	ELECT 1 20% 100V	Q6	8-765-450-40	2SK125-4
C50	1-123-380-00	ELECT 1 20% 100V	Q7	8-729-178-55	2SC2785
C51	1-108-425-00	MYLAR 0.022 10% 200V	Q8	8-765-450-40	2SK125-4
C52	1-108-425-00	MYLAR 0.022 10% 200V	Q9	8-729-178-55	2SC2785
C53	1-131-341-00	TANTALUM 0.1 10% 35V	Q10	8-729-178-55	2SC2785
C54	1-131-347-00	TANTALUM 1 10% 35V	Q11	8-729-255-12	2SC2551
C55	1-131-347-00	TANTALUM 1 10% 35V	Q12	8-729-255-12	2SC2551
C56	1-131-347-00	TANTALUM 1 10% 35V	Q13	8-729-255-12	2SC2551
C63	1-131-347-00	TANTALUM 1 10% 35V	Q14	8-729-255-12	2SC2551
C65	1-123-385-00	ELECT 22 20% 100V			
C66	1-123-384-00	ELECT 10 20% 100V	R14	1-215-475-00	METAL 180K 1% 1/6W
C67	1-131-347-00	TANTALUM 1 10% 35V	R15	1-215-485-00	METAL 470K 1% 1/6W
			R16	1-215-475-00	METAL 180K 1% 1/6W
			R17	1-214-966-00	METAL 1.2M 1% 1/4W
CN1	1-560-935-00	RECEPTACLE, 40P MALE	R18	1-214-970-00	METAL 1.8M 1% 1/4W
	1-560-707-00	POLARISING KEY			
D1	8-719-815-55	1S1555	R19	1-214-971-00	METAL 2M 1% 1/4W
D2	8-719-815-55	1S1555	R20	1-214-971-00	METAL 2M 1% 1/4W
D3	8-719-815-55	1S1555	R27	1-215-487-00	METAL 560K 1% 1/6W
D4	8-719-815-55	1S1555	R35	1-215-466-00	METAL 75K 1% 1/6W
D5	8-719-815-55	1S1555	R36	1-215-477-00	METAL 220K 1% 1/6W
IC1	8-741-127-70	BX1277: SONY	R37	1-215-466-00	METAL 75K 1% 1/6W
IC2	8-741-127-80	BX1278: SONY	R38	1-214-966-00	METAL 1.2M 1% 1/4W
IC3	8-741-127-80	BX1278: SONY	R39	1-214-953-00	METAL 360K 1% 1/4W
IC4	8-741-127-80	BX1278: SONY	R40	1-214-953-00	METAL 360K 1% 1/4W
IC5	8-741-127-70	BX1277: SONY	R46	1-214-787-00	METAL 270K 1% 1/4W
IC6	8-741-137-20	BX1372: SONY			
IC7	8-741-137-20	BX1372: SONY	R49	1-215-471-00	METAL 120K 1% 1/6W
IC8	8-741-137-20	BX1372: SONY	R50	1-215-471-00	METAL 120K 1% 1/6W
IC9	8-759-990-62	TL062CP: TI	R51	1-215-460-00	METAL 43K 1% 1/6W
IC10	8-759-990-62	TL062CP: TI	R52	1-215-460-00	METAL 43K 1% 1/6W
IC11	8-759-990-82	TL082CP: TI	R53	1-215-463-00	METAL 56K 1% 1/6W
IC12	8-759-907-92	$\mu$ A796HCA: FSC			
IC13	8-741-108-00	BX1080: SONY	R54	1-215-478-00	METAL 240K 1% 1/6W
IC14	8-759-990-62	TL062CP: TI	R55	1-215-478-00	METAL 240K 1% 1/6W
IC15	8-759-900-64	TL064CN: TI	R56	1-215-464-00	METAL 82K 1% 1/6W
			R57	1-215-464-00	METAL 62K 1% 1/6W
			R58	1-215-465-00	METAL 68K 1% 1/6W
			R59	1-215-465-00	METAL 68K 1% 1/6W
			R64	1-215-469-00	METAL 100K 1% 1/6W
			R67	1-215-465-00	METAL 68K 1% 1/6W
			R68	1-215-465-00	METAL 68K 1% 1/6W
			R69	1-215-476-00	METAL 200K 1% 1/6W
L1	1-408-429-00	MICRO 470			
L2	1-408-417-00	MICRO 47			
L3	1-408-417-00	MICRO 47			
L4	1-408-417-00	MICRO 47			
L5	1-408-417-00	MICRO 47			
L6	1-408-417-00	MICRO 47			

## F-23, EN-33/33A

Ref.No.	Parts No.	Description
R70	1-215-476-00	METAL 200K 1% 1/6W
R73	1-215-481-00	METAL 330K 1% 1/6W
R74	1-215-469-00	METAL 100K 1% 1/6W
R75	1-215-469-00	METAL 100K 1% 1/6W
R82	1-215-485-00	METAL 470K 1% 1/6W
R87	1-215-461-00	METAL 47K 1% 1/6W
R88	1-215-461-00	METAL 47K 1% 1/6W
R89	1-215-461-00	METAL 47K 1% 1/6W
R90	1-215-461-00	METAL 47K 1% 1/6W
R96	1-215-469-00	METAL 100K 1% 1/6W
R106	1-215-455-00	METAL 27K 1% 1/6W
R107	1-215-455-00	METAL 27K 1% 1/6W
R108	1-215-455-00	METAL 27K 1% 1/6W
R109	1-215-455-00	METAL 27K 1% 1/6W
R110	1-215-468-00	METAL 91K 1% 1/6W
R111	1-215-468-00	METAL 91K 1% 1/6W
R112	1-215-468-00	METAL 91K 1% 1/6W
R113	1-215-468-00	METAL 91K 1% 1/6W
R114	1-214-966-00	METAL 1.2M 1% 1/4W
R115	1-214-966-00	METAL 1.2M 1% 1/4W
RV1	1-228-459-00	METAL 10K
RV2	1-228-459-00	METAL 10K
RV3	1-230-848-11	METAL 1M
RV4	1-230-848-11	METAL 1M
RV5	1-228-459-00	METAL 10K
RV6	1-230-848-11	METAL 1M
RV7	1-226-096-00	METAL 500K
RV8	1-228-932-00	METAL 10K
RV9	1-228-932-00	METAL 10K
RV10	1-228-932-00	METAL 10K
RV11	1-228-932-00	METAL 10K
RV12	1-228-477-00	METAL 100K
RV13	1-228-477-00	METAL 100K
RV14	1-228-477-00	METAL 100K
RV15	1-228-477-00	METAL 100K
RV16	1-228-477-00	METAL 100K
RV17	1-228-477-00	METAL 100K
RV18	1-228-477-00	METAL 100K
RV19	1-228-477-00	METAL 100K
RV20	1-228-461-00	METAL 50K
RV21	1-228-908-00	METAL 50K
RV22	1-228-908-00	METAL 50K
RV23	1-228-908-00	METAL 50K
RV24	1-228-908-00	METAL 50K
RV25	1-228-908-00	METAL 50K

Ref.No.	Parts No.	Description
RV26	1-228-908-00	METAL 50K
RV27	1-228-908-00	METAL 50K
RV28	1-228-908-00	METAL 50K
RV29	1-228-462-00	METAL 100K
RV30	1-228-462-00	METAL 100K
RV31	1-228-462-00	METAL 100K
RV32	1-228-462-00	METAL 100K
RV33	1-228-458-00	METAL 5K
RV34	1-228-462-00	METAL 100K
S1	1-554-075-00	SLIDE
S2	1-554-076-00	SLIDE

T1 1-433-260-00 COUPLING

### EN-33/33A BOARD

A-7513-068-A	MOUNTED CIRCUIT BOARD
	"EN-33" (NTSC)
A-7513-070-A	MOUNTED CIRCUIT BOARD
	"EN-33A" (PAL)
C18	1-131-347-00 TANTALUM 1 10% 35V
C26	1-131-347-00 TANTALUM 1 10% 35V
C38	1-131-347-00 TANTALUM 1 10% 35V
C45	1-131-347-00 TANTALUM 1 10% 35V
C46	1-124-286-00 ELECT 33 20% 16V
C56	1-131-347-00 TANTALUM 1 10% 35V
C61	1-131-345-00 TANTALUM 0.47 10% 35V
C62	1-124-286-00 ELECT 33 20% 16V
C71	1-131-347-00 TANTALUM 1 10% 35V
C74	1-131-347-00 TANTALUM 1 10% 35V
C75	1-163-243-00 CERAMIC CHIP 47PF 5% 50V
C109	1-163-243-00 CERAMIC CHIP 47PF 5% 50V
C128	1-163-105-00 CERAMIC CHIP 33PF 5% 50V
	(NTSC)
C129	1-163-088-00 CERAMIC CHIP 5P 50V
	(NTSC)
CN1	1-560-935-00 RECEPTACLE, 40P MALE
	1-560-707-00 POLARISING KEY
D5	8-719-815-55 1S1555
DL1	1-415-291-00 790nS (NTSC)
	1-415-304-00 338nS (PAL)
DL2	1-415-290-00 410nS (NTSC)

Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
IC4	8-759-240-53	TC4053BP: TOSHIBA	Q22	8-729-101-25	2SC1009A
IC5	8-749-910-55	BX1055: SONY	Q23	8-729-101-25	2SC1009A
IC6	8-749-931-50	BX315: SONY	Q24	8-729-101-25	2SC1009A (NTSC)
IC7	8-759-911-77	CX7968A: SONY	Q25	8-729-101-25	2SC1009A (NTSC)
IC8	8-759-906-59	CX22017: SONY	Q26	8-729-101-25	2SC1009A (NTSC)
IC10	8-759-906-13	$\mu$ A79M05AHC: FSC	Q27	8-729-101-25	2SC1009A
L1	1-408-417-00	MICRO 47	Q28	8-729-122-63	2SA1226
L3	1-408-417-00	MICRO 47	Q29	8-729-101-25	2SC1009A
L4	1-408-417-00	MICRO 47	Q30	8-729-101-25	2SC1009A
L5	1-408-417-00	MICRO 47	Q31	8-729-122-63	2SA1226
L6	1-408-849-00	MICRO 330 (NTSC)	Q32	8-729-101-25	2SC1009A
L7	1-408-148-00	MICRO 10 (NTSC)	Q33	8-729-101-25	2SC1009A
L8	1-408-150-00	MICRO 22 (NTSC)	Q34	8-729-101-25	2SC1009A
	1-408-170-00	MICRO 18 (PAL)	Q35	8-729-101-25	2SC1009A
L9	1-408-851-00	MICRO 560 (NTSC)	Q36	8-729-101-25	2SC1009A
L11	1-408-358-00	MICRO 100 (NTSC)	Q37	8-729-101-25	2SC1009A
	1-408-368-00	MICRO 220 (PAL)	Q38	8-729-122-63	2SA1226
L12	1-408-417-00	MICRO 47	Q39	8-729-101-25	2SC1009A
L13	1-408-145-00	COIL 19 (NTSC)	Q40	8-729-101-25	2SC1009A
L17	1-408-417-00	MICRO 47	Q41	8-729-101-25	2SC1009A
L18	1-408-406-00	MICRO 5.6	Q42	8-729-101-25	2SC1009A
			Q43	8-729-101-25	2SC1009A
			Q44	8-729-101-25	2SC1009A
			Q45	8-729-101-25	2SC1009A
			Q46	8-729-101-25	2SC1009A
LV1	1-408-844-00	22 (NTSC)	Q47	8-729-101-25	2SC1009A
	1-408-845-00	100 (PAL)	Q48	8-729-101-25	2SC1009A
LV2	1-408-844-00	22	Q49	8-729-101-25	2SC1009A
			Q50	8-729-101-25	2SC1009A
			Q51	8-729-101-25	2SC1009A
Q1	8-729-364-12	2SC641K	Q52	8-729-101-25	2SC1009A
Q2	8-729-101-25	2SC1009A	Q53	8-729-122-63	2SA1226
Q3	8-729-101-25	2SC1009A	Q54	8-729-122-63	2SA1226
Q4	8-729-101-25	2SC1009A	Q55	8-729-122-63	2SA1226
Q5	8-729-101-25	2SC1009A	Q56	8-729-101-25	2SC1009A
			Q65	8-729-364-12	2SC641K
Q6	8-729-122-63	2SA1226			
Q7	8-729-122-63	2SA1226	R14	1-214-503-00	METAL 3.32K 0.5% 1/4W(NTSC)
Q8	8-729-122-63	2SA1226		1-214-483-00	METAL 4.99K 1% 1/2W (PAL)
Q9	8-729-122-63	2SA1226	R15	1-214-499-00	METAL 1.62K 0.5% 1/4W(NTSC)
Q10	8-729-101-25	2SC1009A		1-214-482-00	METAL 2.55K 1% 1/2W (PAL)
Q11	8-729-101-25	2SC1009A	R16	1-214-504-00	METAL 9.09K 0.5% 1/4W(NTSC)
Q13	8-729-122-63	2SA1226		1-214-485-00	METAL 13.7K 1% 1/2W (PAL)
Q14	8-729-101-25	2SC1009A	R61	1-214-503-00	METAL 3.32K 0.5% 1/4W(NTSC)
Q15	8-729-100-66	2SC1623		1-214-483-00	METAL 4.99K 1% 1/2W (PAL)
Q16	8-729-101-25	2SC1009A	R62	1-214-499-00	METAL 1.62K 0.5% 1/2W(NTSC)
				1-214-482-00	METAL 2.55K 1% 1/2W (PAL)
Q17	8-729-101-25	2SC1009A	R63	1-214-504-00	METAL 9.09K 0.5% 1/2W(NTSC)
Q18	8-729-101-25	2SC1009A		1-214-485-00	METAL 13.7K 1% 1/2W (PAL)
Q19	8-729-101-25	2SC1009A	R87	1-214-502-00	METAL 2.67K 0.5% 1/4W(NTSC)
Q20	8-729-101-25	2SC1009A		1-214-482-00	METAL 2.55K 1% 1/2W (PAL)
Q21	8-729-101-25	2SC1009A	R88	1-214-501-00	METAL 2.32K 0.5% 1/4W(NTSC)
				1-214-485-00	METAL 13.7K 1% 1/2W (PAL)

# HN-33/33A, HN-30B

Ref.No. Parts No. Description

R96 1-215-829-11 METAL 91K 1% 1/8W (PAL)  
R102 1-215-830-11 METAL 100K 1% 1/8W (PAL)  
R127 1-214-500-00 METAL 2.26K 0.5% 1/4W(NTSC)  
R128 1-214-503-00 METAL 3.32K 0.5% 1/4W(NTSC)  
R131 1-214-483-00 METAL 4.99K 1% 1/2W (PAL)

R132 1-214-482-00 METAL 2.55K 1% 1/2W (PAL)  
R164 1-214-482-00 METAL 2.55K 1% 1/2W  
R165 1-214-485-00 METAL 13.7K 1% 1/2W  
R179 1-214-482-00 METAL 2.55K 1% 1/2W  
R180 1-214-483-00 METAL 4.99K 1% 1/2W

R206 1-215-820-00 METAL 39K 1% 1/8W  
R212 1-215-463-00 METAL 56K 1% 1/6W  
R214 1-215-463-00 METAL 56K 1% 1/6W  
R218 1-215-829-11 METAL 91K 1% 1/8W (PAL)  
R219 1-215-829-11 METAL 91K 1% 1/8W (PAL)

R260 1-215-473-00 METAL 150K 1% 1/6W (NTSC)  
R261 1-215-474-00 METAL 160K 1% 1/6W (NTSC)  
R262 1-215-474-00 METAL 160K 1% 1/6W (NTSC)  
R263 1-215-473-00 METAL 150K 1% 1/6W (NTSC)

RV1 1-228-459-00 METAL 10K  
RV2 1-228-456-00 METAL 1K  
RV4 1-228-459-00 METAL 10K (NTSC)  
RV5 1-228-457-00 METAL 2K (NTSC)  
RV6 1-228-458-00 METAL 5K

RV7 1-228-459-00 METAL 10K  
RV8 1-228-456-00 METAL 1K  
RV9 1-228-456-00 METAL 1K  
RV10 1-228-457-00 METAL 2K  
RV11 1-228-457-00 METAL 2K

RV12 1-228-457-00 METAL 2K  
RV13 1-226-369-00 METAL 5K  
RV14 1-228-457-00 METAL 2K  
RV15 1-228-458-00 METAL 5K  
RV16 1-228-456-00 METAL 1K

RV17 1-226-369-00 METAL 5K  
RV18 1-228-454-00 METAL 200  
RV19 1-228-454-00 METAL 200  
RV20 1-228-459-00 METAL 10K (NTSC)  
RV21 1-228-458-00 METAL 5K (NTSC)

S1 1-552-509-00 SLIDE  
S2 1-552-509-00 SLIDE  
S3 1-554-923-11 TOGGLE (NTSC)

Ref.No. Parts No. Description

## HN-30B BOARD

A-7513-056-A MOUNTED CIRCUIT BOARD  
"HN-30B"

1-560-707-00 POLARISING KEY

CN1 1-562-066-00 RECEPTACLE, 40P FEMALE  
CN2 1-562-066-00 RECEPTACLE, 40P FEMALE  
CN3 1-562-066-00 RECEPTACLE, 40P FEMALE  
CN4 1-562-066-00 RECEPTACLE, 40P FEMALE  
CN5 1-562-066-00 RECEPTACLE, 40P FEMALE

CN6 1-562-066-00 RECEPTACLE, 40P FEMALE  
**CN7 1-562-112-21 RECEPTACLE, 50P MALE**  
CN8 1-556-762-00 60P PLUG WITH HARNESS (AT)  
CN9 1-556-763-00 40P PLUG WITH HARNESS (SG)  
CN10 1-556-764-00 50P PLUG WITH HARNESS (SH)

CN11 1-564-153-00 RECEPTACLE, 12P MALE  
1-933-827-00 12P PLUG WITH HARNESS  
(PA-HN)

## 1-561-178-00 PLUG HOUSING 12P

1-560-767-00 PLUG CONTACT  
1-560-768-00 PLUG CONTACT

## 1-508-944-00 INDEX PIN

CN12 1-564-532-00 RECEPTACLE, 16P MALE  
1-561-035-00 PLUG, HOUSING 16P  
1-560-767-00 PLUG, CONTACT AWG22 TO 24  
1-560-768-00 PLUG, CONTACT AWG24 TO 28  
1-508-944-00 INDEX PIN

## CN13 1-562-222-00 RECEPTACLE, 6P FEMALE "REMOTE"

CN14 1-561-781-41 RECEPTACLE, BNC "TEST OUT"  
CN15 1-564-156-00 RECEPTACLE, 12P MALE  
1-561-171-00 PLUG, HOUSING 12P  
1-560-768-00 PLUG, CONTACT  
1-508-944-00 INDEX PIN

# HN-30B, HP-14, IE-6/6P

Ref.No.	Parts No.	Description
CN16	1-564-155-00	RECEPTACLE, 6P MALE
	1-561-656-00	PLUG, HOUSING 6P
	1-560-768-00	PLUG, CONTACT
	1-508-944-00	INDEX PIN
CN17	1-564-153-00	RECEPTACLE, 12P MALE
	1-561-178-00	PLUG, HOUSING 12P
	1-560-768-00	PLUG, CONTACT
	1-561-037-00	PLUG, CONTACT
	1-508-944-00	INDEX PIN
CN18	1-564-153-00	RECEPTACLE, 12P MALE
	1-561-178-00	PLUG, HOUSING 12P
	1-560-768-00	PLUG, CONTACT
	1-561-037-00	PLUG, CONTACT
	1-508-944-00	INDEX PIN
CN19	1-564-080-00	RECEPTACLE, 12P MALE
	1-561-178-00	PLUG, HOUSING 12P
	1-560-768-00	PLUG, CONTACT
	1-561-037-00	PLUG, CONTACT
	1-508-944-00	INDEX PIN
CN20	1-564-079-00	RECEPTACLE, 10P MALE
	1-561-177-00	PLUG, HOUSING 10P
	1-560-768-00	PLUG, CONTACT
	1-508-944-00	INDEX PIN
CN21	1-564-168-11	RECEPTACLE, 3P MALE
RV1	1-228-450-00	WIREWOUND 10K "PEDESTAL"
<b>HP-14 BOARD</b>		
	A-7513-059-A	MOUNTED CIRCUIT BOARD "HP-14"
	1-934-869-13	3P PLUG WITH HARNESS
C1	1-131-344-00	TANTALUM 0.33 10% 35V
C2	1-123-827-00	ELECT 220 20% 4V
C5	1-123-647-00	ELECT 47 20% 6.3V
C6	1-123-616-00	ELECT 4.7 20% 25V
C8	1-131-344-00	TANTALUM 0.33 10% 35V
D1	8-719-160-03	RD2.2FC
IC1	8-751-840-00	CX184: SONY

Ref.No.	Parts No.	Description
RV1	1-230-337-11	METAL 10K "VOLUME"
SP1	1-503-059-00	4Ω 0.1W
<b>IE-6/6P BOARD</b>		
	A-7511-889-B	MOUNTED CIRCUIT BOARD "IE-6" (BVP-30/BVP-30PM)
	A-7511-911-B	MOUNTED CIRCUIT BOARD "IE-6P" (BVP-30P)
C4	1-161-894-00	CERAMIC 0.1 50V
C6	1-161-894-00	CERAMIC 0.1 50V
C8	1-131-347-00	TANTALUM 1 10% 35V
C12	1-161-894-00	CERAMIC 0.1 50V
C24	1-161-894-00	CERAMIC 0.1 50V
C25	1-161-894-00	CERAMIC 0.1 50V
C26	1-161-894-00	CERAMIC 0.1 50V
C28	1-161-013-00	CERAMIC 0.01 10% 25V
C37	1-161-894-00	CERAMIC 0.1 50V
C42	1-131-377-00	TANTALUM 10 10V
C47	1-131-347-00	TANTALUM 1 10% 35V
C54	1-131-347-00	TANTALUM 1 10% 35V
C55	1-131-347-00	TANTALUM 1 10% 35V
C57	1-131-368-00	TANTALUM 3.3 10% 16V
C60	1-161-894-00	CERAMIC 0.1 50V
C61	1-131-343-00	TANTALUM 0.22 10% 35V
C62	1-161-894-00	CERAMIC 0.1 50V
C66	1-102-934-00	CERAMIC 1PF ±0.5PF 50V
C68	1-131-368-00	TANTALUM 3.3 10% 16V
C74	1-131-347-00	TANTALUM 1 10% 35V
C79	1-161-855-00	CERAMIC 47PF 5% 50V
C82	1-102-964-00	CERAMIC 36P 5% 50V (PAL)
C83	1-130-479-00	MYLAR 0.0047 5% 50V
C90	1-131-347-00	TANTALUM 1 10% 35V
C94	1-131-347-00	TANTALUM 1 10% 35V
C97	1-161-013-00	CERAMIC 0.01 10% 25V
C98	1-161-013-00	CERAMIC 0.01 10% 25V
C99	1-161-013-00	CERAMIC 0.01 10% 25V
C100	1-161-013-00	CERAMIC 0.01 10% 25V

Ref.No.	Parts No.	Description
CN1	1-560-935-00 1-560-707-00	RECEPTACLE, 40P MALE POLARISING KEY
CV1	1-141-206-00	TRIMMER 45PF
CV2	1-141-240-00	TRIMMER 20PF
CV3	1-141-206-00	TRIMMER 45PF
D4	8-719-815-55	1S1555
D5	8-719-709-25	1S1925P
D6	8-719-100-38	RD6.2EB2
D7	8-719-709-25	1S1925P
D8	8-719-709-25	1S1925P
D9	8-719-815-55	1S1555
D10	8-719-100-38	RD6.2EB2
D12	8-719-815-55	1S1555
D13	8-719-100-28	RD4.7EB3
D14	8-719-815-55	1S1555
D15	8-719-815-55	1S1555
DL1	1-415-265-31 1-415-266-31	1H x 2 (NTSC) 1H x 2 (PAL)
DL2	1-415-166-00 1-415-302-00	165nS (NTSC) 120nS (PAL)
	( S/N UP TO 22700 BVP-3AP(EK) S/N UP TO 30110 BVP-3AS(AE) S/N UP TO 10055 BVP-30AP(EK) )	
	1-415-237-00	140nS (PAL)
	( S/N 22701 AND HIGHER BVP-3AP(EK) S/N 30111 AND HIGHER BVP-3AS(AE) S/N 10056 AND HIGHER BVP-30AP(EK) )	
IC1	8-759-907-92	$\mu$ A796HCA: FSC
IC2	8-759-907-34	$\mu$ A733HC: FSC
IC3	8-759-907-34	$\mu$ A733HC: FSC
IC4	8-759-990-62	TL062CP: TI
IC5	8-759-907-34	$\mu$ A733HC: FSC
IC6	8-759-907-92	$\mu$ A796HCA: FSC
IC7	8-759-909-96	LM711CH: NS
IC8	8-749-939-33	BX3933: SONY
IC9	8-759-240-53	TC4053BP: TOSHIBA
L4	1-408-358-00	MICRO 100
L5	1-408-150-00	MICRO 22
L10	1-408-147-00	MICRO 2.2
L11	1-408-150-00	MICRO 22
L13	1-408-357-00 1-408-150-00	MICRO 33 (NTSC) MICRO 22 (PAL)
L14	1-408-357-00 1-408-150-00	MICRO 33 (NTSC) MICRO 22 (PAL)
L18	1-408-954-00	MICRO 47
L19	1-408-850-00	MICRO 390

Ref.No.	Parts No.	Description
Q1	8-729-364-12	2SC641K
Q2	8-729-178-54	2SC2785
Q3	8-729-110-53	2SA1005
Q4	8-729-117-54	2SA1175
Q5	8-729-178-73	2SC2787
Q6	8-729-178-73	2SC2787
Q7	8-729-110-53	2SA1005
Q8	8-769-132-00	2SK121-2
		( Be carefully when replace from 2SK43 to 2SK121. See page 5-75. )
Q9	8-729-266-93	2SC2669
Q10	8-729-266-93	2SC2669
Q11	8-729-178-73	2SC2787
Q12	8-729-178-73	2SC2787
Q13	8-729-178-73	2SC2787
Q14	8-729-178-73	2SC2787
Q15	8-729-178-73	2SC2787
Q16	8-729-110-53	2SA1005
Q17	8-729-900-71	J271
Q18	8-729-266-93	2SC2669
Q19	8-729-266-93	2SC2669
Q20	8-729-178-54	2SC2785
Q21	8-729-900-75	J175
Q22	8-729-900-75	J175
Q23	8-729-900-75	J175
Q24	8-729-110-53	2SC1005
Q25	8-729-110-53	2SC1005
Q26	8-729-110-53	2SA1005
Q27	8-729-178-73	2SC2787
Q28	8-729-178-73	2SC2787
Q29	8-729-178-73	2SC2787
Q30	8-729-178-73	2SC2787
Q31	8-729-178-73	2SC2787
Q32	8-769-194-00	2SK43-4
Q33	8-729-110-53	2SA1005
Q34	8-729-110-53	2SA1005
Q35	8-729-178-73	2SC2787
Q36	8-729-178-73	2SC2787
Q37	8-729-110-53	2SA1005
Q38	8-765-222-20	2SC1963
Q39	8-729-800-43	2SK152-3
Q40	8-729-178-73	2SC2787
Q41	8-729-117-54	2SA1175
Q42	8-729-201-84	2SC3112
Q43	8-729-110-53	2SA1005
Q44	8-729-178-73	2SC2787
Q45	8-729-110-53	2SA1005
Q46	8-729-178-73	2SC2787
Q47	8-729-110-53	2SA1005
Q48	8-729-117-54	2SA1175
Q49	8-729-178-54	2SC2785
Q51	8-729-201-84	2SC3112

Ref.No.	Parts No.	Description
Q52	8-729-117-54	2SA1175
Q53	8-729-117-54	2SA1175
Q54	8-729-800-43	2SK152-3
Q55	8-729-110-53	2SA1005
Q56	8-729-364-12	2SC641K
Q57	8-729-117-54	2SA1175
Q58	8-729-117-54	2SA1175
Q59	8-729-117-54	2SA1175
Q60	8-729-117-54	2SA1175
Q61	8-729-178-54	2SC2785
Q62	8-729-364-12	2SC641K
Q63	8-729-900-76	J176
Q64	8-729-178-54	2SC2785
Q65	8-729-178-73	2SC2787
Q66	8-729-178-73	2SC2787
Q67	8-729-117-54	2SA1175
Q68	8-729-117-54	2SA1175
R147	1-215-820-11	METAL 39K 1% 1/8W
RV1	1-228-457-00	METAL 2K
RV2	1-228-470-00	METAL 500
RV4	1-228-456-00	METAL 1K
RV5	1-228-472-00	METAL 2K
RV6	1-228-470-00	METAL 500
RV7	1-228-472-00	METAL 2K
RV8	1-228-457-00	METAL 2K
RV9	1-228-458-00	METAL 5K
RV10	1-228-459-00	METAL 10K
RV11	1-228-458-00	METAL 5K
S1	1-554-399-00	TOGGLE
S2	1-554-076-00	SLIDE
S3	1-554-399-00	TOGGLE
X1	1-527-861-21	30MHz

Ref.No.	Parts No.	Description
<b>PA-37 BOARD</b>		
	A-7513-057-A	MOUNTED CIRCUIT BOARD "PA-37"
C5	1-163-220-11	CERAMIC CHIP 3P 50V
C10	1-163-218-11	CERAMIC CHIP 1.5P 50V
C15	1-163-220-11	CERAMIC CHIP 3P 50V
C16	1-163-991-11	CERAMIC CHIP 0.0022 10% 50V
CN1	1-564-158-00 1-933-833-00	RECEPTACLE, 5P MALE 5P PLUG WITH HARNESS (PP-PA)
CN2	1-564-158-00 1-933-833-21	RECEPTACLE, 5P MALE 5P PLUG WITH HARNESS (PP-PA)
CN3	1-564-158-00 1-933-833-31	RECEPTACLE, 5P MALE 5P PLUG WITH HARNESS (PP-PA)
CN4	1-564-160-00 1-933-827-00	RECEPTACLE, 12P MALE 12P PLUG WITH HARNESS (PA-HN)
CV1	1-141-206-00	TRIMMER 45PF
CV2	1-141-206-00	TRIMMER 45PF
CV3	1-141-206-00	TRIMMER 45PF
CV4	1-141-299-11	TRIMMER 6PF
CV5	1-141-299-11	TRIMMER 6PF
CV6	1-141-299-11	TRIMMER 6PF
CV7	1-141-299-11	TRIMMER 6PF
CV8	1-141-291-11	TRIMMER 10PF
CV9	1-141-299-11	TRIMMER 6PF
CV10	1-141-291-11	TRIMMER 10PF
CV11	1-141-299-11	TRIMMER 6PF
CV12	1-141-291-11	TRIMMER 10PF
D1	8-719-901-33	1SS133
D2	8-719-901-33	1SS133
D3	8-719-901-33	1SS133
L1	1-408-417-21	MICRO 47
L2	1-408-429-00	MICRO 470
L3	1-408-417-21	MICRO 47
L4	1-408-417-21	MICRO 47
L5	1-408-417-21	MICRO 47
L6	1-408-429-00	MICRO 470
L7	1-408-417-21	MICRO 47
L8	1-408-417-21	MICRO 47
L9	1-408-417-21	MICRO 47
L10	1-408-429-00	MICRO 470
L11	1-408-417-21	MICRO 47
L12	1-408-417-21	MICRO 47



# A-37, PP-13, PR-75

Ref. No.      Parts No.      Description

Q1      8-729-122-63      2SA1226  
Q2      8-729-101-25      2SC1009A  
Q3      8-729-122-63      2SA1226  
Q4      8-729-101-25      2SC1009A  
Q5      8-729-122-63      2SA1226

Q6      8-729-101-25      2SC1009A  
Q7      8-729-122-63      2SA1226  
Q8      8-729-101-25      2SC1009A  
Q9      8-729-122-63      2SA1226  
Q10      8-729-101-25      2SC1009A

Q11      8-729-122-63      2SA1226  
Q12      8-729-101-25      2SC1009A

RV1      1-228-457-00      METAL 2K  
RV2      1-228-457-00      METAL 2K  
RV3      1-228-461-00      METAL 50K  
RV4      1-228-457-00      METAL 2K  
RV5      1-228-457-00      METAL 2K

RV6      1-228-461-00      METAL 50K  
RV7      1-228-457-00      METAL 2K  
RV8      1-228-457-00      METAL 2K  
RV9      1-228-461-00      METAL 50K  
RV10      1-228-464-00      METAL 500K

RV11      1-228-464-00      METAL 500K  
RV12      1-228-464-00      METAL 500K

## PP-13 BOARD

A-7513-058-A      MOUNTED CIRCUIT BOARD  
"PP-13"  
1-564-158-00      RECEPTACLE, 5P MALE

C1      1-163-830-11      CERAMIC CHIP 0.022 5% 250V  
C2      1-163-830-11      CERAMIC CHIP 0.022 5% 250V  
C3      1-163-830-11      CERAMIC CHIP 0.022 5% 250V  
C4      1-163-830-11      CERAMIC CHIP 0.022 5% 250V

Q1      8-765-710-20      2SK284-2

R1      1-216-321-11      METAL CHIP 2M 2% 1/8W  
R2      1-216-253-00      METAL CHIP 200K 5% 1/8W

Ref. No.      Parts No.      Description

## PR-75 BOARD

A-7513-356-A      MOUNTED CIRCUIT BOARD  
"RP-75"

C3      1-161-892-21      CERAMIC 0.047 50V  
C4      1-124-271-00      ELECT 1 20% 50V  
C6      1-124-283-00      ELECT 4.7 20% 16V  
C7      1-161-038-00      CERAMIC CHIP 0.1 25V  
C8      1-163-038-00      CERAMIC CHIP 0.1 25V

C13      1-124-584-00      ELECT 100 20% 10V  
C23      1-161-892-21      CERAMIC 0.047 50V  
C24      1-124-271-00      ELECT 1 20% 50V  
C26      1-125-283-00      ELECT 4.7 20% 16V  
C33      1-131-347-00      TANTALUM 1 10% 35V

C34      1-131-347-00      TANTALUM 1 10% 35V  
C35      1-131-347-00      TANTALUM 1 10% 35V  
C43      1-161-892-21      CERAMIC 0.047 50V  
C44      1-124-271-00      ELECT 1 20% 50V  
C46      1-124-283-00      ELECT 4.7 20% 16V

CN1      1-560-935-00      RECEPTACLE, MALE, 40P  
CN2      1-560-690-11      RECEPTACLE, 4P  
1-561-724-00      PLUG, SHORT

CV1      1-141-298-11      10PF~2PF  
CV2      1-141-298-11      10PF~2PF  
CV3      1-141-298-11      10PF~2PF  
CV4      1-141-300-11      CERAMIC TRIMMER

D1      8-719-101-23      1SS123  
D2      8-719-815-59      2S1555-S  
D3      8-719-101-23      1SS123  
D4      8-719-101-98      1SS97-0  
D5      8-719-815-59      1S1555-S

D6      8-719-815-59      1S1555-S  
D7      8-719-815-59      1S1555-S  
D8      8-719-815-59      1S1555-S  
D9      8-719-101-23      1SS123  
D11      8-719-101-23      1SS123

D12      8-719-815-59      1S1555-S  
D13      8-719-101-23      1SS123  
D14      8-719-101-98      1SS97-0  
D15      8-719-815-59      1S1555-S  
D16      8-719-815-59      1S1555-S

D17      8-719-815-59      1S1555-S  
D18      8-719-815-59      1S1555-S  
D19      8-719-100-03      1S2835  
D20      8-719-101-98      1SS97-0  
D21      8-719-101-23      1SS123

Ref. No.      Parts No.      Description

D27      8-719-815-59      1S1555-S  
D28      8-719-815-59      1S1555-S  
D29      8-719-100-03      1S2835  
D30      8-719-100-03      1S2835  
D31      8-719-815-59      1S1555-S

IC1      8-759-906-53      TL062CPS; TI  
IC2      8-759-906-53      TL062CPS; TI  
IC3      8-759-906-53      TL062CPS; TI  
IC4      8-759-906-53      TL062CPS; TI  
IC5      8-759-906-53      TL062CPS; TI

IC6      8-749-931-50      BX-315; SONY  
IC7      8-759-200-81      TC4053BF; TOSHIBA

L1      1-408-417-00      MICRO 47  
L2      1-408-417-00      MICRO 47  
L3      1-408-413-00      MICRO 22

Q1      8-729-175-73      2SC2757  
Q2      8-729-175-73      2SC2757  
Q3      8-729-175-73      2SC2757  
Q4      8-729-175-73      2SC2757  
Q5      8-729-109-44      2SK94

Q6      8-729-175-73      2SC2757  
Q7      8-729-122-63      2SA1226  
Q8      8-729-122-63      2SA1226  
Q9      8-729-122-63      2SA1226  
Q10      8-729-122-63      2SA1226

Q11      8-729-175-73      2SC2757  
Q12      8-729-175-73      2SC2757  
Q13      8-729-175-73      2SC2757  
Q14      8-729-122-63      2SA1226  
Q15      8-729-175-73      2SC2757

Q16      8-729-175-73      2SC2757  
Q17      8-729-175-73      2SC2757  
Q18      8-729-122-63      2SA1226  
Q19      8-729-122-63      2SA1226  
Q21      8-729-175-73      2SC2757

Q22      8-729-175-73      2SC2757  
Q23      8-729-175-73      2SC2757  
Q24      8-729-175-73      2SC2757  
Q25      8-729-109-44      2SK94  
Q26      8-729-175-73      2SC2757

Q27      8-729-122-63      2SA1226  
Q28      8-729-122-63      2SA1226  
Q29      8-729-122-63      2SA1226  
Q30      8-729-122-63      2SA1226  
Q31      8-729-175-73      2SC2757

Ref. No.      Parts No.      Description

Q32      8-729-175-73      2SC2757  
Q33      8-729-175-73      2SC2757  
Q34      8-729-122-63      2SA1226  
Q35      8-729-175-73      2SC2757  
Q36      8-729-175-73      2SC2757

Q37      8-729-175-73      2SC2757  
Q38      8-729-175-73      2SC2757  
Q41      8-729-175-73      2SC2757  
Q42      8-729-175-73      2SC2757  
Q43      8-729-175-73      2SC2757

Q44      8-729-175-73      2SC2757  
Q45      8-729-109-44      2SK94  
Q46      8-729-175-73      2SC2757  
Q47      8-729-122-63      2SA1226  
Q48      8-729-122-63      2SA1226

Q49      8-729-122-63      2SA1226  
Q50      8-729-122-63      2SA1226  
Q51      8-729-175-73      2SC2757  
Q52      8-729-175-73      2SC2757  
Q53      8-729-175-73      2SC2757

Q54      8-729-122-63      2SA1226  
Q55      8-729-175-73      2SC2757  
Q56      8-729-175-73      2SC2757  
Q57      8-729-175-73      2SC2757  
Q58      8-729-175-73      2SC2757

Q60      8-729-122-63      2SA1226  
Q61      8-729-175-73      2SC2757  
Q62      8-729-175-73      2SC2757  
Q63      8-729-175-73      2SC2757  
Q64      8-729-175-73      2SC2757

Q65      8-729-175-73      2SC2757  
Q66      8-729-175-73      2SC2757  
Q67      8-729-175-73      2SC2757  
Q68      8-729-175-73      2SC2757  
Q69      8-729-175-73      2SC2757


Q70      8-729-175-73      2SC2757  
Q71      8-729-175-73      2SC2757  
Q72      8-729-175-73      2SC2757  
Q73      8-729-175-73      2SC2757  
Q74      8-729-364-12      2SC641K

Q75      8-729-175-73      2SC2757  
Q76      8-729-175-73      2SC2757

R25      1-215-830-11      METAL 100K 1% 1/8W  
R28      1-215-820-11      METAL 39K 1% 1/8W  
R85      1-215-830-11      METAL 100K 1% 1/8W  
R155      1-215-830-11      METAL 100K 1% 1/8W  
R240      1-215-822-11      METAL 43K 1% 1/8W

# R-75, PS-41

Ref.No.	Parts No.	Description
RV1	1-228-456-00	CERMET 1K
RV2	1-228-473-00	CERMET 5K
RV3	1-228-472-00	CERMET 2K
RV4	1-228-458-00	CERMET 5K
RV5	1-228-457-00	CERMET 2K
RV6	1-228-474-00	CERMET 10K
RV7	1-228-470-00	CERMET 500
RV8	1-228-471-00	CERMET 1K
RV9	1-228-457-00	CERMET 2K
RV11	1-228-456-00	CERMET 1K
RV12	1-228-473-00	CERMET 5K
RV13	1-228-472-00	CERMET 2K
RV14	1-228-458-00	CERMET 5K
RV15	1-228-457-00	CERMET 2K
RV16	1-228-474-00	CERMET 10K
RV17	1-228-470-00	CERMET 500
RV18	1-228-471-00	CERMET 1K
RV19	1-228-458-00	CERMET 5K
RV20	1-228-461-00	CERMET 50K
RV21	1-228-456-00	CERMET 1K
RV22	1-228-473-00	CERMET 5K
RV23	1-228-472-00	CERMET 2K
RV24	1-228-458-00	CERMET 5K
RV25	1-228-457-00	CERMET 2K
RV26	1-228-474-00	CERMET 10K
RV27	1-228-470-00	CERMET 500
RV28	1-228-471-00	CERMET 1K
RV29	1-228-458-00	CERMET 5K
RV30	1-228-455-00	CERMET 500
RV31	1-228-459-00	CERMET 10K
RV32	1-228-459-00	CERMET 10K
RV33	1-228-458-00	CERMET 5K
RV34	1-228-458-00	CERMET 5K
RV35	1-228-458-00	CERMET 5K
RV36	1-228-458-00	CERMET 5K
S1	1-554-076-00	SLIDE
S2	1-554-076-00	SLIDE "MASKING ON/OFF"
S3	1-552-509-00	DIP "R-γ ON/OFF"
S4	1-552-509-00	DIP "G-γ ON/OFF"
S5	1-552-509-00	DIP "B-γ ON/OFF"
S6	1-554-398-00	TOGGLE "R/OFF/B"
S7	1-554-398-00	TOGGLE "G/OFF/-G"
S8	1-554-397-00	TOGGLE "ENC/REG"
S9	1-554-399-00	TOGGLE "KNEE AUT/MAN."
TH1	1-800-946-00	360±5%
TH2	1-800-946-00	360±5%
TH3	1-800-946-00	360±5%

Ref.No.	Parts No.	Description
<b>PS-41 BOARD</b>		
	 A-7513-055-A	MOUNTED CIRCUIT BOARD "PS-41"
C1	1-108-603-00	MYLAR 0.1 5% 50V
C2	1-124-149-00	ELECT 220 20% 25V
C3	1-131-347-00	TANTALUM 1 10% 35V
C4	1-124-149-00	ELECT 220 20% 25V
C5	1-130-193-00	POLYESTER 0.47 5% 100V
C7	1-130-475-00	MYLAR 0.0022 5% 50V
C8	1-130-193-00	POLYESTER 0.47 5% 100V
C9	1-131-466-00	TANTALUM 150 20% 16V
C11	1-130-193-00	POLYESTER 0.47 5% 100V
C12	1-131-466-00	TANTALUM 150 20% 16V
C14	1-131-347-00	TANTALUM 1 10% 35V
C16	1-131-583-00	TANTALUM 150 20% 20V
C17	1-131-347-00	TANTALUM 1 10% 35V
C24	1-131-465-00	TANTALUM 68 20% 16V
C26	1-131-466-00	TANTALUM 150 20% 16V
C30	1-123-384-00	ELECT 10 20% 100V
C31	1-124-341-00	ELECT 1 20% 200V
C32	1-123-384-00	ELECT 10 20% 100V
C33	1-123-819-00	ELECT 33 20% 25V
C36	1-106-367-00	MYLAR 0.01 10% 200V
C37	1-123-929-00	ELECT 1 160V
C43	1-123-910-00	ELECT 330 20% 16V
C44	1-123-384-00	ELECT 10 20% 100V
C46	1-131-345-00	TANTALUM 0.47 10% 35V
C48	1-131-345-00	TANTALUM 0.47 10% 35V
C50	1-131-345-00	TANTALUM 0.47 10% 35V
C56	1-125-444-11	DOUBLE LAYERS 0.1 5.5V
C58	1-130-193-00	POLYESTER 0.47 5% 100V
C59	1-101-110-11	CERAMIC 220P 10% 50V
C60	1-131-341-00	TANTALUM 0.1 10% 35V
C64	1-123-819-00	ELECT 33 20% 25V
C65	1-124-149-00	ELECT 220 20% 25V
C66	1-108-599-00	MYLAR 0.068 5% 50V
C70	1-131-465-00	TANTALUM 68 20% 16V
C75	1-124-294-00	ELECT 330 20% 25V
C76	1-130-193-00	POLYESTER 0.47 5% 100V
C77	1-131-466-00	TANTALUM 150 20% 16V
C78	1-124-560-11	ELECT 10 20% 250V
C81	1-106-367-00	MYLAR 0.01 10% 200V
C82	1-123-384-00	ELECT 10 20% 100V
C83	1-131-347-00	TANTALUM 1 10% 35V
C84	1-131-347-00	TANTALUM 1 10% 35V
C85	1-131-347-00	TANTALUM 1 10% 35V

Ref.No.	Parts No.	Description
C86	1-161-892-11	CERAMIC 0.047 50V
C87	1-161-892-11	CERAMIC 0.047 50V
C88	1-161-892-11	CERAMIC 0.047 50V
C89	1-123-252-00	ELECT 1 160V

CN1	1-560-935-00 1-560-707-00	RECEPTACLE.40P MALE POLARISING KEY
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D3	8-719-815-55	1S1555
D4	8-719-981-00	ERC81-004
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-981-00	ERC81-004

D10	8-719-162-07	RD6.2EB
D12	8-719-162-07	RD6.2EB
D16	8-719-815-55	1S1555
D21	8-719-300-76	RH1A
D22	8-719-300-76	RH1A

D23	8-719-300-76	RH1A
D24	8-719-981-01	ERA81-004
D25	8-719-981-01	ERA81-004
D26	8-719-981-01	ERA81-004
D27	8-719-911-55	U05G

D28	8-719-981-01	ERA81-004
D29	8-719-981-01	ERA81-004
D31	8-719-182-07	RD8.2EB04
D32	8-719-182-07	RD8.2EB04
D33	8-719-182-07	RD8.2EB04

D36	8-719-931-08	EQB01-08
D37	8-719-815-55	1S1555
D38	8-719-815-55	1S1555
D39	8-719-815-55	1S1555
D40	8-719-815-55	1S1555

D41	8-719-982-04	ERB81-004
D42	8-719-982-04	ERB81-004
D43	8-719-982-04	ERB81-004
D44	8-719-982-04	ERB81-004
D45	8-719-300-76	RH1A

D46	8-719-300-76	RH1A
D47	8-719-300-76	RH1A
D48	8-719-300-76	RH1A
D49	8-719-101-98	1SS97

IC1	8-759-900-64	TL064CN: TI
IC2	8-759-904-94	TL494CN: TI
IC3	8-759-904-94	TL494CN: TI
IC4	8-759-101-54	μPC454D: NEC
IC5	8-759-900-64	TL064CN: TI

Ref.No.	Parts No.	Description
IC6	8-759-278-07	TA78L007AP: TOSHIBA
IC7	8-759-278-18	TA78L018AP: TOSHIBA
IC8	8-759-101-54	μPC454D: NEC
IC9	8-759-708-09	NJM78L09A: JRC

△IC11	8-759-905-80	AD580MH: ANALOG DEVICE
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IC12	8-759-205-79	TC504027BF: TOSHIBA
IC13	8-759-700-68	NJM79L09A: JRC

L1	1-408-142-21	22.5
L2	1-408-549-00	150
L3	1-408-549-00	150
L4	1-421-013-00	HORIZONTAL CHOKE 25
L5	1-421-013-00	HORIZONTAL CHOKE 25

L6	1-408-142-21	22.5
L9	1-421-013-00	HORIZONTAL CHOKE 25

Q1	8-729-113-33	2SB733
Q2	8-729-113-33	2SB733
Q3	8-729-113-33	2SB733
Q4	8-729-113-33	2SB733
Q5	8-729-177-32	2SD733

Q6	8-729-113-33	2SB733
Q7	8-729-177-32	2SD733
Q9	8-729-364-12	2SC641K
Q10	8-729-810-62	2SD1061
Q11	8-729-810-62	2SD1061

Q12	8-729-255-12	2SC2551
Q13	8-729-255-12	2SC2551
Q15	8-729-178-55	2SC2785
Q16	8-729-117-54	2SA1175
Q17	8-729-113-33	2SB733

Q18	8-729-113-33	2SB733
Q19	8-729-113-33	2SB733
Q20	8-729-178-55	2SC2785
Q21	8-729-255-12	2SC2551
Q22	8-729-178-55	2SC2785
Q23	8-729-178-55	2SC2785

# S-41, SG-63A

Ref.No.	Parts No.	Description
R10	1-247-120-00	CARBON 360 5% 1/4W
R15	1-217-612-00	WIREWOUND 0.1 2W
R26	1-213-134-00	METAL 180 5% 1W
R57	1-215-469-00	METAL 100K 1% 1/6W
R63	1-215-462-00	METAL 51K 1% 1/6W
R64	1-215-478-00	METAL 240K 1% 1/6W
R70	1-215-833-11	METAL 4.7K 1% 1/4W
R73	1-217-643-00	WIREWOUND 10 1% 1/2W
R74	1-217-643-00	WIREWOUND 10 1% 1/2W
R75	1-217-643-00	WIREWOUND 10 1% 1/2W
R76	1-215-503-00	METAL 12K 1/4W
R79	1-217-643-00	WIREWOUND 10 1% 1/2W
R80	1-217-643-00	WIREWOUND 10 1% 1/2W
R81	1-217-643-00	WIREWOUND 10 1% 1/2W
R82	1-215-502-00	METAL 100 1/4W
R85	1-217-643-00	WIREWOUND 10 1% 1/2W
R86	1-217-643-00	WIREWOUND 10 1% 1/2W
R87	1-217-643-00	WIREWOUND 10 1% 1/2W
R109	1-215-485-00	METAL 470K 1% 1/6W
R110	1-215-491-00	METAL 820K 1% 1/6W
R119	1-207-622-00	WIREWOUND 2.2 10% 3W
R120	1-215-444-11	METAL 9.1K 1% 1/6W
RV1	1-228-456-00	METAL 1K
RV2	1-228-456-11	METAL 1K
RV3	1-228-455-00	METAL 500
RV4	1-228-454-00	METAL 200
RV5	1-230-097-00	METAL 100
RV6	1-228-458-00	METAL 5K
RV7	1-230-097-00	METAL 100
RV9	1-230-097-00	METAL 100
S1	1-554-076-00	SLIDE
T1	1-447-816-12	DC-DC CONVERTER

Ref. No.	Parts No.	Description
<b>SG-63A BOARD</b>		
	A-7511-913-B	MOUNTED CIRCUIT BOARD "SG-63A"
C4	1-107-075-00	MICA 39PF 5% 50V
C19	1-163-243-00	CERAMIC CHIP 47PF 5%
C27	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C28	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C33	1-163-233-00	CERAMIC CHIP 18PF 5%
C34	1-124-169-00	ELECT 100 20% 10V
C35	1-107-075-00	MICA 39PF 5% 50V
C36	1-107-075-00	MICA 39PF 5% 50V
C42	1-163-255-00	CERAMIC CHIP 150PF 5%
C49	1-130-483-00	MYLAR 0.01 5% 50V
C51	1-161-009-00	CERAMIC 0.0047 10% 25V
CN1	1-564-083-00 1-556-763-00	RECEPTACLE, 40P MALE 40P PLUG WITH HARNESS
CN2	1-561-724-00 1-560-690-00	SOKET, CONNECTOR PLUG, SHORT 4P
CN3	1-561-724-00 1-560-690-00	SOKET, CONNECTOR PLUG, SHORT 4P
CN4	1-561-724-00 1-560-690-00	SOKET, CONNECTOR PLUG, SHORT 4P
D1	8-719-100-03	1S2835
D2	8-719-100-03	1S2835
D3	8-719-101-23	1SS123
D5	8-719-100-05	1S2837
IC1	8-759-240-53	TC4053BP: TOSHIBA
IC2	8-759-900-86	SN74LS86N: TI
IC3	8-759-901-23	SN74LS123N: TI
IC4	8-759-990-62	TL062CP: TI
IC5	8-759-200-81	TC4053BF: TOSHIBA
IC6	8-759-200-79	TC4049BF: TOSHIBA
IC7	8-759-906-53	TL062CPS: TI
IC8	8-759-200-81	TC4053BF: TOSHIBA
IC9	8-757-731-00	CX773A: SONY
IC10	8-759-907-21	CX7969: SONY
IC11	8-759-200-80	TC4050BF: TOSHIBA
IC12	8-749-910-40	BX1040: SONY
IC13	8-759-101-12	μPC311G2: NEC
IC14	8-757-903-00	CX7903: SONY
IC15	8-759-902-21	SN74LS221N: TI

Ref.No.	Parts No.	Description
L7	1-408-150-00	MICRO 22
L8	1-408-150-00	MICRO 22
L12	1-408-147-00	MICRO 2.2
L13	1-408-151-00	MICRO 47
Q1	8-729-122-63	2SA1226
Q2	8-729-101-25	2SC1009A
Q3	8-729-101-25	2SC1009A
Q4	8-729-364-12	2SC641K
Q5	8-729-101-25	2SC1009A
Q6	8-729-122-63	2SA1226
Q7	8-729-101-25	2SC1009A
Q8	8-729-122-63	2SA1226
Q10	8-729-364-12	2SC641K
Q11	8-729-101-25	2SC1009A
Q12	8-729-105-74	2SK523-M1
Q13	8-729-101-25	2SC1009A
Q14	8-729-105-74	2SK523-M1
Q16	8-729-122-63	2SA1226
R104	1-215-437-00	METAL 4700 1%
RV1	1-228-460-00	METAL 20K
RV2	1-228-460-00	METAL 20K
RV4	1-228-460-00	METAL 20K
RV5	1-228-460-00	METAL 20K
RV7	1-228-461-00	METAL 50K
S1	1-554-076-00	SLIDE
S2	1-554-076-00	SLIDE
S3	1-553-925-00	ROTARY
S4	1-554-075-00	SLIDE
S5	1-554-076-00	SLIDE
THP1	1-806-166-00	4300
X1	1-567-084-00	14.31818MHz
X2	1-567-085-00	14.31818MHz

Ref.No.	Parts No.	Description
<b>SH-8A BOARD</b>		
	A-7513-064-A	MOUNTED CIRCUIT BOARD "SH-8A"
C16	1-130-192-00	POLYESTER 0.22 5% 100V
C24	1-163-231-00	CERAMIC CHIP 15PF 5% 50V
C25	1-163-231-00	CERAMIC CHIP 15PF 5% 50V
C26	1-163-231-00	CERAMIC CHIP 15PF 5% 50V
C28	1-163-117-00	CERAMIC CHIP 100PF 5% 50V
C41	1-131-361-00	TANTALUM 2.2 10% 20V
C42	1-131-361-00	TANTALUM 2.2 10% 20V
C43	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C49	1-163-287-00	ELECT (NONPOLAR) 10 20% 10V
C50	1-163-267-00	CERAMIC CHIP 470P 5% 50V
C51	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C52	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
C53	1-163-141-00	CERAMIC CHIP 0.001 5% 50V
CN1	1-560-675-00 1-556-764-00	RECEPTACLE, 50P MALE 50P PLUG WITH HARNESS
CN2	1-564-151-00 1-561-176-00 1-560-768-00 1-508-944-00	RECEPTACLE, 8P MALE PLUG, HOUSING 8P PLUG, CONTACT INDEX PIN
CN3	1-564-152-00 1-561-177-00 1-560-768-00 1-508-944-00	RECEPTACLE, 10P MALE PLUG, HOUSING 10P PLUG, CONTACT INDEX PIN
CN4	1-564-159-00 1-933-834-00	RECEPTACLE, 7P MALE PLUG 7P WITH HARNESS
D1	8-719-100-05	1S2837
D2	8-719-100-03	1S2835
D4	8-719-100-05	1S2837
D5	8-719-100-05	1S2837
D6	8-719-100-05	1S2837
D7	8-719-105-32	RD2.7MB2
D8	8-719-100-05	1S2837
D10	8-719-100-03	1S2835
D11	8-719-100-03	1S2835
D12	8-719-100-03	1S2835
D13	8-719-100-03	1S2835
IC1	8-759-906-54	TL064CNS: TI
IC2	8-759-906-54	TL064CNS: TI
IC3	8-759-906-54	TL064CNS: TI
IC4	8-759-200-90	TC4538BF: TOSHIBA
IC5	8-759-906-54	TL064CNS: TI

# SH-8A, DUS-122, SW-77

Ref.No.	Parts No.	Description
Q1	8-723-305-00	2SK43-5
Q2	8-723-305-00	2SK43-5
Q3	8-723-305-00	2SK43-5
Q4	8-729-101-25	2SC1009A
Q5	8-729-101-25	2SC1009A
Q6	8-729-122-63	2SA1226
Q7	8-729-122-63	2SA1226
Q8	8-729-122-63	2SA1226
Q9	8-723-305-00	2SK43-5
Q10	8-723-305-00	2SK43-5
Q11	8-723-305-00	2SK43-5
Q12	8-729-101-25	2SC1009A
Q14	8-729-122-63	2SA1226
Q15	8-729-101-25	2SC1009A
Q16	8-729-122-63	2SA1226
Q17	8-729-101-25	2SC1009A
Q18	8-729-101-25	2SC1009A
Q19	8-729-122-63	2SA1226
Q22	8-729-101-25	2SC1009A
Q23	8-729-101-25	2SC1009A
Q24	8-729-101-25	2SC1009A
Q25	8-729-101-25	2SC1009A
Q26	8-729-122-63	2SA1226
Q27	8-729-101-25	2SC1009A

R4	1-246-441-00	CARBON 47 5% 1/4W
R90	1-215-462-00	METAL 51K 1% 1/6W
R92	1-215-462-00	METAL 51K 1% 1/6W
R95	1-215-473-00	METAL 150K 1% 1/6W

RV1	1-228-462-00	METAL 100K
RV2	1-228-462-00	METAL 100K
RV3	1-228-462-00	METAL 100K
RV4	1-228-462-00	METAL 100K
RV5	1-228-462-00	METAL 100K

RV6	1-228-462-00	METAL 100K
RV7	1-228-462-00	METAL 100K
RV8	1-228-462-00	METAL 100K
RV9	1-228-462-00	METAL 100K
RV10	1-228-462-00	METAL 100K

RV11	1-228-462-00	METAL 100K
RV12	1-228-462-00	METAL 100K
RV13	1-228-463-00	METAL 200K
RV14	1-228-463-00	METAL 200K
RV15	1-228-463-00	METAL 200K

RV16	1-228-463-00	METAL 200K
RV17	1-228-462-00	METAL 100K
RV18	1-228-462-00	METAL 100K
RV19	1-228-462-00	METAL 100K
RV20	1-228-459-00	METAL 10K

RV21	1-228-463-00	METAL 200K
RV22	1-228-463-00	METAL 200K
RV23	1-228-463-00	METAL 200K
RV24	1-228-463-00	METAL 200K
RV25	1-228-463-00	METAL 200K

Ref.No.	Parts No.	Description
RV26	1-228-463-00	METAL 200K
RV27	1-228-462-00	METAL 100K
RV28	1-228-462-00	METAL 100K
RV29	1-228-462-00	METAL 100K
RV30	1-228-462-00	METAL 100K
RV31	1-228-452-00	METAL 50
RV32	1-228-462-00	METAL 100K
RV33	1-228-462-00	METAL 100K
RV34	1-228-462-00	METAL 100K
RV35	1-228-462-00	METAL 100K
RV36	1-228-459-00	METAL 10K

S1	1-552-509-00	SLIDE
S2	1-552-509-00	SLIDE

## DUS-122 BOARD

All of the component parts on the DUS-122 board are supplied together when you order SH-8A board

1-619-130-11 PC, BOARD DUS-122

RV1	1-228-461-00	CERMET 50K
RV2	1-228-461-00	CERMET 50K

## SW-77 BOARD

A-7520-131-A MOUNTED CIRCUIT BOARD  
"SW-77"

CN1	1-564-172-00	RECEPTACLE, 7P MALE
	1-933-834-00	PLUG 7P WITH HARNESS

S1	1-554-396-00	TOGGLE "AUTO CENT"
S2	1-554-395-00	TOGGLE "AUTO W/B BAL"

## SW-78, SW-207, SW-79

Ref.No.      Parts No.      Description

### SW-78 BOARD

S/N UP TO 50065 BVP-30(J)	UP TO 16415 BVP-3A(J)
S/N UP TO 60510 BVP-30(UC)	UP TO 42020 BVP-3A(UC)
S/N UP TO 10160 BVP-30AP(EK)	UP TO 10106 BVP-3AN(J)
	UP TO 22710 BVP-3AP(EK)
	UP TO 30110 BVP-3AS(AE)

A-7511-886-A      MOUNTED CIRCUIT BOARD  
"SW-78"

D1	8-179-191-07	RD9.1EB
D2	8-719-815-85	1S1585
D3	8-719-815-85	1S1585
D4	8-719-815-85	1S1585

S1	1-554-356-00	TOGGLE "CAMERA/VTR"
S2	1-554-400-00	TOGGLE "GAIN"
S3	1-554-355-00	TOGGLE "OUTPUT"
S4	1-554-355-00	TOGGLE "WHITE BAL"

Ref.No.      Parts No.      Description

### SW-207 BOARD

S/N 50066 AND HIGHER BVP-30(J)	16416 AND HIGHER BVP-3A(J)
S/N 60511 AND HIGHER BVP-30(UC)	42021 AND HIGHER BVP-3A(UC)
S/N 10161 AND HIGHER BVP-30AP(EK)	22711 AND HIGHER BVP-3AP(EK)
	30111 AND HIGHER BVP-3AS(AE)

1-621-164-11      PC BOARD, SW-207

CN1      1-506-467-11      PIN, CONNECTOR 2P

D1	8-719-100-54	RD9.1EB1
D2	8-719-100-55	1S1555
D3	8-719-100-55	1S1555
D4	8-719-100-55	1S1555

R1	1-215-433-00	METAL 3.3K 1% 1/6W
R2	1-215-445-00	METAL 10K 1% 1/6W
R3	1-215-445-00	METAL 10K 1% 1/6W
R4	1-215-457-00	METAL 33K 1% 1/6W
R5	1-215-467-00	METAL 82K 1% 1/6W
R6	1-215-471-00	METAL 120K 1% 1/6W

S1	1-554-356-00	SWITCH, TOGGLE
S2	1-554-400-00	SWITCH, TOGGLE
S3	1-570-911-11	SWITCH, TOGGLE
S4	1-554-355-00	SWITCH, TOGGLE

### SW-79 BOARD

A-7520-132-A      MOUNTED CIRCUIT BOARD  
"SW-79"

S1      1-553-739-00      PUSH "VTR"



Ref.No.	Parts No.	Description	Ref.No.	Parts No.	Description
<b>VA-23 BOARD</b>			<b>C200</b>	<b>1-161-894-00</b>	<b>CERAMIC 0.1 50V</b>
			<b>C201</b>	<b>1-161-894-00</b>	<b>CERAMIC 0.1 50V</b>
			<b>C202</b>	<b>1-161-894-00</b>	<b>CERAMIC 0.1 50V</b>
	A-7513-053-A	MOUNTED CIRCUIT BOARD "VA-23"			
<b>C3</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>CN1</b>	<b>1-560-935-00</b>	<b>RECEPTACLE, 40P MALE</b>
<b>C6</b>	<b>1-124-290-00</b>	<b>ELECT (NONPOLAR) 47 20% 10V</b>		<b>1-560-707-00</b>	<b>POLARISING KEY</b>
<b>C7</b>	<b>1-124-271-00</b>	<b>ELECT (NONPOLAR) 1 20% 50V</b>			
<b>C8</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>			
<b>C12</b>	<b>1-124-139-00</b>	<b>ELECT 100 20% 10V</b>	<b>CV1</b>	<b>1-141-206-00</b>	<b>TRIMMER 45PF</b>
			<b>CV2</b>	<b>1-141-206-00</b>	<b>TRIMMER 45PF</b>
<b>C13</b>	<b>1-131-345-00</b>	<b>TANTALUM 0.47 10% 35V</b>	<b>CV3</b>	<b>1-141-206-00</b>	<b>TRIMMER 45PF</b>
<b>C14</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>			
<b>C19</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>			
<b>C22</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>			
<b>C23</b>	<b>1-124-290-00</b>	<b>ELECT (NONPOLAR) 47 20% 10V</b>	<b>D1</b>	<b>8-719-815-59</b>	<b>1S1555S</b>
<b>C24</b>	<b>1-124-271-00</b>	<b>ELECT (NONPOLAR) 1 20% 50V</b>	<b>D2</b>	<b>8-719-815-59</b>	<b>1S1555S</b>
<b>C25</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D3</b>	<b>8-719-815-59</b>	<b>1S1555S</b>
<b>C28</b>	<b>1-124-139-00</b>	<b>ELECT 100 20% 10V</b>	<b>D4</b>	<b>8-719-815-85</b>	<b>1S1585</b>
<b>C29</b>	<b>1-131-345-00</b>	<b>TANTALUM 0.47 10% 35V</b>	<b>D5</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C30</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>			
			<b>D6</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C33</b>	<b>1-131-368-00</b>	<b>TANTALUM 3.3 10% 16V</b>	<b>D7</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C37</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D8</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C39</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D9</b>	<b>8-719-815-85</b>	<b>1S1585</b>
<b>C41</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D10</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C42</b>	<b>1-124-290-00</b>	<b>ELECT (NONPOLAR) 47 20% 10V</b>			
<b>C43</b>	<b>1-124-271-00</b>	<b>ELECT (NONPOLAR) 1 20% 50V</b>	<b>D11</b>	<b>8-719-815-85</b>	<b>1S1585</b>
<b>C46</b>	<b>1-124-139-00</b>	<b>ELECT 100 20% 10V</b>	<b>D12</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C47</b>	<b>1-131-345-00</b>	<b>TANTALUM 0.47 10% 35V</b>	<b>D13</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C48</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D14</b>	<b>8-719-815-55</b>	<b>1S1555</b>
<b>C55</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>D18</b>	<b>8-719-815-59</b>	<b>1S1555-S</b>
<b>C56</b>	<b>1-123-380-00</b>	<b>ELECT 1 20% 100V</b>	<b>IC1</b>	<b>8-749-910-55</b>	<b>BX1055: SONY</b>
<b>C57</b>	<b>1-123-383-00</b>	<b>ELECT 4.7 20% 100V</b>	<b>IC2</b>	<b>8-749-910-82</b>	<b>BX1082: SONY</b>
<b>C60</b>	<b>1-123-332-00</b>	<b>ELECT 47 20% 25V</b>	<b>IC3</b>	<b>8-759-907-92</b>	<b>μA796HCA: FSC</b>
<b>C61</b>	<b>1-123-380-00</b>	<b>ELECT 1 20% 100V</b>	<b>IC4</b>	<b>8-749-910-55</b>	<b>BX1055: SONY</b>
<b>C66</b>	<b>1-123-380-00</b>	<b>ELECT 1 20% 100V</b>	<b>IC5</b>	<b>8-749-910-82</b>	<b>BX1082: SONY</b>
<b>C71</b>	<b>1-123-380-00</b>	<b>ELECT 1 20% 100V</b>	<b>IC6</b>	<b>8-759-907-92</b>	<b>μA796HCA: FSC</b>
<b>C75</b>	<b>1-123-379-00</b>	<b>ELECT 0.47 20% 100V</b>	<b>IC7</b>	<b>8-749-910-55</b>	<b>BX1055: SONY</b>
<b>C76</b>	<b>1-123-379-00</b>	<b>ELECT 0.47 20% 100V</b>	<b>IC8</b>	<b>8-749-910-82</b>	<b>BX1082: SONY</b>
<b>C79</b>	<b>1-123-380-00</b>	<b>ELECT 1 20% 50V</b>	<b>IC9</b>	<b>8-759-907-92</b>	<b>μA796HCA: FSC</b>
<b>C82</b>	<b>1-106-172-00</b>	<b>MYLAR 0.001 5% 100V</b>	<b>IC10</b>	<b>8-741-121-90</b>	<b>BX1219: SONY</b>
<b>C83</b>	<b>1-106-172-00</b>	<b>MYLAR 0.001 5% 100V</b>			
<b>C84</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>IC11</b>	<b>8-741-121-90</b>	<b>BX1219: SONY</b>
<b>C85</b>	<b>1-131-347-00</b>	<b>TANTALUM 1 10% 35V</b>	<b>IC12</b>	<b>8-741-121-90</b>	<b>BX1219: SONY</b>
<b>C92</b>	<b>1-163-109-00</b>	<b>CERAMIC CHIP 47PF 5% 50V</b>	<b>IC13</b>	<b>8-759-240-11</b>	<b>TC4011BP: TOSHIBA</b>
<b>C93</b>	<b>1-163-109-00</b>	<b>CERAMIC CHIP 47PF 5% 50V</b>			
<b>C94</b>	<b>1-163-109-00</b>	<b>CERAMIC CHIP 47PF 5% 50V</b>	<b>Q1</b>	<b>8-729-117-54</b>	<b>2SA1175</b>
<b>C96</b>	<b>1-161-043-00</b>	<b>CERAMIC 0.0022 10% 25V</b>	<b>Q2</b>	<b>8-729-117-54</b>	<b>2SA1175</b>
<b>C97</b>	<b>1-161-013-00</b>	<b>CERAMIC 0.01 10% 25V</b>	<b>Q3</b>	<b>8-765-450-20</b>	<b>2SK125</b>
<b>C98</b>	<b>1-161-013-00</b>	<b>CERAMIC 0.01 10% 25V</b>	<b>Q4</b>	<b>8-729-178-54</b>	<b>2SC2785</b>
<b>C99</b>	<b>1-161-013-00</b>	<b>CERAMIC 0.01 10% 25V</b>	<b>Q5</b>	<b>8-765-450-20</b>	<b>2SK125</b>
<b>C100</b>	<b>1-161-013-00</b>	<b>CERAMIC 0.01 10% 25V</b>	<b>Q6</b>	<b>8-765-450-20</b>	<b>2SK125</b>
<b>C101</b>	<b>1-163-083-00</b>	<b>CERAMIC CHIP 1P 50V</b>	<b>Q7</b>	<b>8-765-450-20</b>	<b>2SK125</b>
<b>C102</b>	<b>1-163-083-00</b>	<b>CERAMIC CHIP 1P 50V</b>	<b>Q8</b>	<b>8-729-178-54</b>	<b>2SC2785</b>
<b>C103</b>	<b>1-163-083-00</b>	<b>CERAMIC CHIP 1P 50V</b>	<b>Q9</b>	<b>8-729-178-54</b>	<b>2SC2785</b>
			<b>Q10</b>	<b>8-729-178-54</b>	<b>2SC2785</b>

# VA-23, FRAME

Ref.No.	Parts No.	Description
Q11	8-729-110-53	2SA1005
Q12	8-729-201-84	2SC3112B
Q13	8-729-178-54	2SC2785
Q14	8-729-117-54	2SA1175
Q15	8-729-117-54	2SA1175
Q16	8-729-117-54	2SA1175
Q17	8-765-450-20	2SK125
Q18	8-729-178-54	2SC2785
Q19	8-765-450-20	2SK125
Q20	8-765-450-20	2SK125
Q21	8-765-450-20	2SK125
Q22	8-769-163-00	2SK152
Q23	8-729-178-73	2SC2787
Q24	8-729-178-73	2SC2787
Q25	8-729-178-73	2SC2787
Q26	8-729-110-53	2SA1005
Q27	8-729-201-84	2SC3112B
Q28	8-729-178-54	2SC2785
Q29	8-729-117-54	2SA1175
Q30	8-729-117-54	2SA1175
Q31	8-729-117-54	2SA1175
Q32	8-729-117-54	2SA1175
Q33	8-765-450-20	2SK125
Q34	8-729-178-54	2SC2785
Q35	8-765-450-20	2SK125
Q36	8-765-450-20	2SK125
Q37	8-765-450-20	2SK125
Q38	8-729-178-54	2SC2785
Q39	8-729-178-54	2SC2785
Q40	8-729-178-54	2SC2785
Q41	8-729-110-53	2SA1005
Q42	8-729-201-84	2SC3112B
Q43	8-729-178-54	2SC2785
Q44	8-729-117-54	2SA1175
Q45	8-729-110-53	2SA1005
Q46	8-729-117-54	2SA1175
Q47	8-729-117-54	2SA1175
Q48	8-729-110-53	2SA1005
Q49	8-729-178-54	2SC2785
Q50	8-729-117-54	2SA1175
Q54	8-729-117-54	2SA1175
Q55	8-729-178-54	2SC2785
Q56	8-729-110-53	2SA1005
Q57	8-729-200-17	2SA1091
Q58	8-729-178-54	2SC2785

R19	1-215-485-00	METAL 470K 1% 1/6W
R166	1-215-819-11	METAL 36K 1% 1/8W
R168	1-215-819-11	METAL 36K 1% 1/8W
R205	1-215-830-11	METAL 100K 1% 1/8W
R207	1-215-822-11	METAL 47K 1% 1/8W
R305	1-215-458-00	METAL 36K 1% 1/6W
R306	1-215-458-00	METAL 36K 1% 1/6W

Ref.No.	Parts No.	Description
RV1	1-228-472-00	METAL 2K
RV2	1-228-472-00	METAL 2K
RV3	1-228-472-00	METAL 2K
RV5	1-228-459-00	METAL 10K
RV6	1-228-460-00	METAL 20K
RV7	1-228-475-00	METAL 20K
RV8	1-228-459-00	METAL 10K
RV9	1-228-460-00	METAL 20K
RV11	1-228-459-00	METAL 10K
RV12	1-228-460-00	METAL 20K
RV13	1-228-475-00	METAL 20K
RV14	1-228-457-00	METAL 2K
RV15	1-228-460-00	METAL 20K
RV17	1-228-459-00	METAL 10K
RV18	1-228-460-00	METAL 20K
RV19	1-228-475-00	METAL 20K
RV20	1-228-459-00	METAL 10K
RV21	1-228-460-00	METAL 20K
RV22	1-228-454-00	METAL 200
RV23	1-228-454-00	METAL 200
RV24	1-228-454-00	METAL 200
RV26	1-228-459-00	METAL 10K
RV27	1-228-457-00	METAL 2K
RV28	1-228-457-00	METAL 2K
RV29	1-228-458-00	METAL 5K
RV30	1-228-458-00	METAL 5K
RV31	1-228-458-00	METAL 5K
RV32	1-228-455-00	METAL 500
RV33	1-228-455-00	METAL 500
RV34	1-228-455-00	METAL 500
RV35	1-228-458-00	METAL 5K
RV36	1-228-460-00	CERMET 20K

## CAMERA FRAME

1-547-133-12	PRISM, OPTICAL "PY-08"
1-934-743-11	PICKUP TUBE SOCKET WITH HARNESS (R)
1-934-744-11	PICKUP TUBE SOCKET WITH HARNESS (G)
1-934-745-11	PICKUP TUBE SOCKET WITH HARNESS (B)

CN101	1-561-812-00	RECEPTACLE, 20P FEMALE "VF"
CN102	1-934-795-11	CCU-15 CONNECTOR WITH HARNESS
CN103	1-561-233-21	RECEPTACLE, 6P FEMALE "LENS"
	1-933-829-13	LENS CONNECTOR WITH HARNESS
CN104	1-562-221-21	RECEPTACLE, 12P FEMALE "VF"

**P-28, MC-19  
W-80, VF-22**

Ref.No. Parts No. Description

**VIEW FINDER**

**LP-28 BOARD**

A-7513-066-A MOUNTED CIRCUIT BOARD  
"LP-28"

CN1 1-564-005-00 RECEPTACLE, 6P MALE  
1-562-151-11 PLUG HOUSING 6P  
1-564-026-00 PLUG CONTACT

CN2 1-564-006-11 RECEPTACLE, 7P MALE  
1-562-152-11 PLUG HOUSING 7P  
1-564-026-00 PLUG CONTACT

D1 8-719-812-43 TLG124A "FILTER/AUDIO 1"  
D2 8-719-812-43 TLG124A "FILTER/AUDIO 2"  
D3 8-719-812-43 TLG124A "FILTER/AUDIO 3"  
D4 8-719-812-43 TLG124A "FILTER/AUDIO 4"  
D5 8-719-812-41 TLR124 "FILTER/AUDIO 5"

D6 8-719-812-44 TLO124 "GAIN UP"  
D7 8-719-812-43 TLG124A "W/B CENT"  
D8 8-719-900-92 GL9PR20 "BATT"  
D9 8-719-900-92 GL9PR20 "REC"  
D10 8-719-909-20 GL9NG2 "10M"

D11 8-719-909-20 GL9NG2 "5M"

**MC-19 BOARD**

1-606-127-00 PRINTED CIRCUIT BOARD  
"MC-19"

CN1 1-561-816-00 RECEPTACLE, 6P FEMALE

**SW-80 BOARD**

1-612-778-11 PRINTED CIRCUIT BOARD  
"SW-80"

D1 8-719-101-98 1SS97  
D2 8-719-815-55 1S1555

S101 1-554-922-11 TOGGLE "TALLY/ZEBRA"

**VF-22 BOARD**

A-7513-067-A MOUNTED CIRCUIT BOARD  
"VF-22"

C6 1-131-347-00 TANTALUM 1 10% 35V  
C7 1-131-347-00 TANTALUM 1 10% 35V  
C8 1-131-347-00 TANTALUM 1 10% 35V  
C10 1-163-117-00 CERAMIC CHIP 100PF 5% 50V  
C11 1-131-347-00 TANTALUM 1 10% 35V

C12 1-131-347-00 TANTALUM 1 10% 35V  
C13 1-163-109-00 CERAMIC CHIP 47PF 5% 50V  
C15 1-106-192-00 MYLAR 0.0068 5% 100V  
C17 1-131-368-00 TANTALUM 3.3 10% 16V

A C18 1-136-287-11 POLYESTER 0.0047 5% 100V

Ref. No. Parts No. Description

**C19 IS SELECTABLE PARTS FOR ADJUSTMENT  
(REFER TO Flyback Pulse Width Adjustment)**

A C19

1-136-287-11 POLYESTER 0.0047 5% 100V  
1-136-288-11 POLYESTER 0.0051 5% 100V  
1-136-289-11 POLYESTER 0.0056 5% 100V  
1-136-290-11 POLYESTER 0.0062 5% 100V  
1-136-291-11 POLYESTER 0.0068 5% 100V  
1-136-292-11 POLYESTER 0.0075 5% 100V  
1-136-293-11 POLYESTER 0.0082 5% 100V  
1-136-306-11 POLYESTER 0.0039 5% 100V  
1-136-307-11 POLYESTER 0.0043 5% 100V

C21 1-163-991-11 CERAMIC CHIP 0.0022 10% 50V  
C22 1-123-384-00 ELECT 10 20% 100V  
C23 1-162-870-11 CERAMIC CHIP 0.0022 10% 1KV  
C24 1-130-815-00 FILM 0.015 5% 630V  
C27 1-124-168-00 ELECT 100 20% 16V

C28 1-131-368-00 TANTALUM 3.3 10% 16V  
C29 1-131-361-00 TANTALUM 2.2 10% 16V  
C30 1-131-347-00 TANTALUM 1 10% 35V  
C33 1-130-487-00 MYLAR 0.022 5% 50V  
C35 1-131-343-00 TANTALUM 0.22 10% 35V

C37 1-130-481-00 MYLAR 0.0068 5% 50V  
C38 1-136-287-11 FILM 0.0047 5% 100V  
C39 1-163-037-00 CERAMIC CHIP 0.022 10% 25V  
C41 1-131-347-00 TANTALUM 1 10% 35V  
C44 1-130-479-00 MYLAR 0.0047 5% 50V

C46 1-131-341-00 TANTALUM 0.1 10% 35V  
C49 1-124-168-00 ELECT 100 20% 16V  
C50 1-123-296-00 ELECT 220 20% 6.3V  
C53 1-163-991-11 CERAMIC CHIP 0.0022 10% 50V  
C55 1-106-188-00 MYLAR 0.0047 5% 100V

C57 1-163-037-00 CERAMIC CHIP 0.022 10% 25V  
C59 1-131-368-00 TANTALUM 3.3 10% 16V

CN1 1-564-004-00 RECEPTACLE, 5P MALE  
1-562-150-11 PLUG HOUSING 5P  
1-564-026-00 PLUG CONTACT

CN2 1-564-002-00 RECEPTACLE, 3P MALE  
1-562-148-11 PLUG HOUSING 3P  
1-564-026-00 PLUG CONTACT

CN3 1-564-003-00 RECEPTACLE, 4P MALE  
1-562-149-11 PLUG HOUSING 4P  
1-564-026-00 PLUG CONTACT

CN4 1-564-002-00 RECEPTACLE, 3P MALE  
1-562-148-11 PLUG HOUSING 3P  
1-564-026-00 PLUG CONTACT

CN5 1-564-006-11 RECEPTACLE, 7P MALE  
1-562-152-11 PLUG HOUSING 7P  
1-564-026-00 PLUG CONTACT

## VF-22, VF FRAME

Ref.No.	Parts No.	Description
CN6	1-564-009-00	RECEPTACLE, 10P MALE
	1-562-155-11	PLUG HOUSING 10P
	1-564-026-00	PLUG CONTACT
CN7	1-564-001-11	RECEPTACLE, 2P MALE
	1-562-147-11	PLUG HOUSING 2P
	1-564-026-00	PLUG CONTACT
CN8	1-564-002-00	RECEPTACLE, 3P MALE
	1-562-148-11	PLUG HOUSING 3P
	1-564-026-00	PLUG CONTACT

D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
D3	8-719-101-23	1SS123
D4	8-719-100-05	1S2837
D5	8-719-101-23	1SS123
D7	8-719-900-93	V09C
D8	8-719-901-19	V11N
D10	8-719-900-93	V09C
D11	8-719-901-19	V11N
D12	8-719-815-55	1S1555

D13	8-719-101-23	1SS123
D14	8-719-800-76	1SS226

**IC1** 8-759-300-28 HA11423MP: HITACHI

**IC2** 8-759-801-06 LB1423N: SANYO

L1	1-408-409-00	MICRO 10
L2	1-408-406-00	MICRO 5.6
L3	1-459-394-00	HORIZONTAL LINEARITY
L4	1-408-080-00	MICRO 100

Q1	8-729-100-66	2SC1623
Q2	8-729-100-66	2SC1623
Q3	8-729-100-66	2SC1623
Q4	8-729-100-76	2SA812
Q5	8-729-100-76	2SA812
Q6	8-729-109-44	2SK94
Q7	8-729-100-76	2SA812
Q8	8-729-800-32	2SC2362K
Q9	8-729-175-73	2SC2757
Q10	8-729-800-32	2SC2362K

Q11	8-729-800-28	2SA1016K
Q12	8-729-102-62	2SC1623
Q13	8-727-587-28	2SC756-872
Q14	8-729-901-27	DTC144WK
Q15	8-729-901-27	DTC144WK

Q17	8-729-901-27	DTC144WK
Q18	8-729-901-27	DTC144WK
Q19	8-729-102-62	2SC1623
Q20	8-729-102-62	2SC1623
Q21	8-729-102-62	2SC1623

Q22	8-729-100-76	2SA812
Q23	8-729-100-76	2SA812
Q24	8-729-216-32	2SA1163
Q25	8-729-216-32	2SA1163

Ref.No.	Parts No.	Description
<b>R33</b>	<b>1-215-487-11</b>	<b>METAL 560K 1% 1/6W</b>
<b>R86</b>	<b>1-215-479-00</b>	<b>METAL 270K 1% 1/6W</b>
<b>R97</b>	<b>1-215-493-00</b>	<b>METAL 1M 1% 1/6W</b>

**RV1** 1-228-452-00 METAL 50

<b>RV2</b>	<b>1-228-466-00</b>	<b>METAL 2M</b>
<b>RV3</b>	<b>1-228-466-00</b>	<b>METAL 2M</b>
<b>RV4</b>	<b>1-228-458-00</b>	<b>METAL 5K</b>
<b>RV5</b>	<b>1-228-458-00</b>	<b>METAL 5K</b>

<b>RV6</b>	<b>1-228-455-00</b>	<b>METAL 500</b>
<b>RV7</b>	<b>1-228-458-00</b>	<b>METAL 5K</b>
<b>RV8</b>	<b>1-228-454-00</b>	<b>METAL 200</b>
<b>RV9</b>	<b>1-228-464-00</b>	<b>METAL 500K</b>
<b>RV10</b>	<b>1-228-463-00</b>	<b>METAL 200K</b>
<b>RV11</b>	<b>1-228-461-00</b>	<b>METAL 50K</b>

**S1** 1-554-371-00 PUSH

**T1** 1-446-106-00 HEATER PULS

**T2** 1-439-225-21 FLYBACK

### VIEWFINDER FRAME

1-451-208-21 DEFLECTION YOKE

**1-464-168-22** MULTIPLIER

1-526-540-00 SOCKET, PICTURE TUBE

**1-546-043-11** PICTURE TUBE 1 1/2-INCH, 40LB4

1-934-936-11 CRT SOCKET WITH HARNESS

**CN101** 1-560-704-00 RECEPTACLE, 20P MALE

**MIC1** 8-814-163-00 MICROPHONE, C-2002A

**PL101** 1-518-337-00 LAMP, TALLY 12V 60mA  
1-517-077-00 HOLDER, LAMP

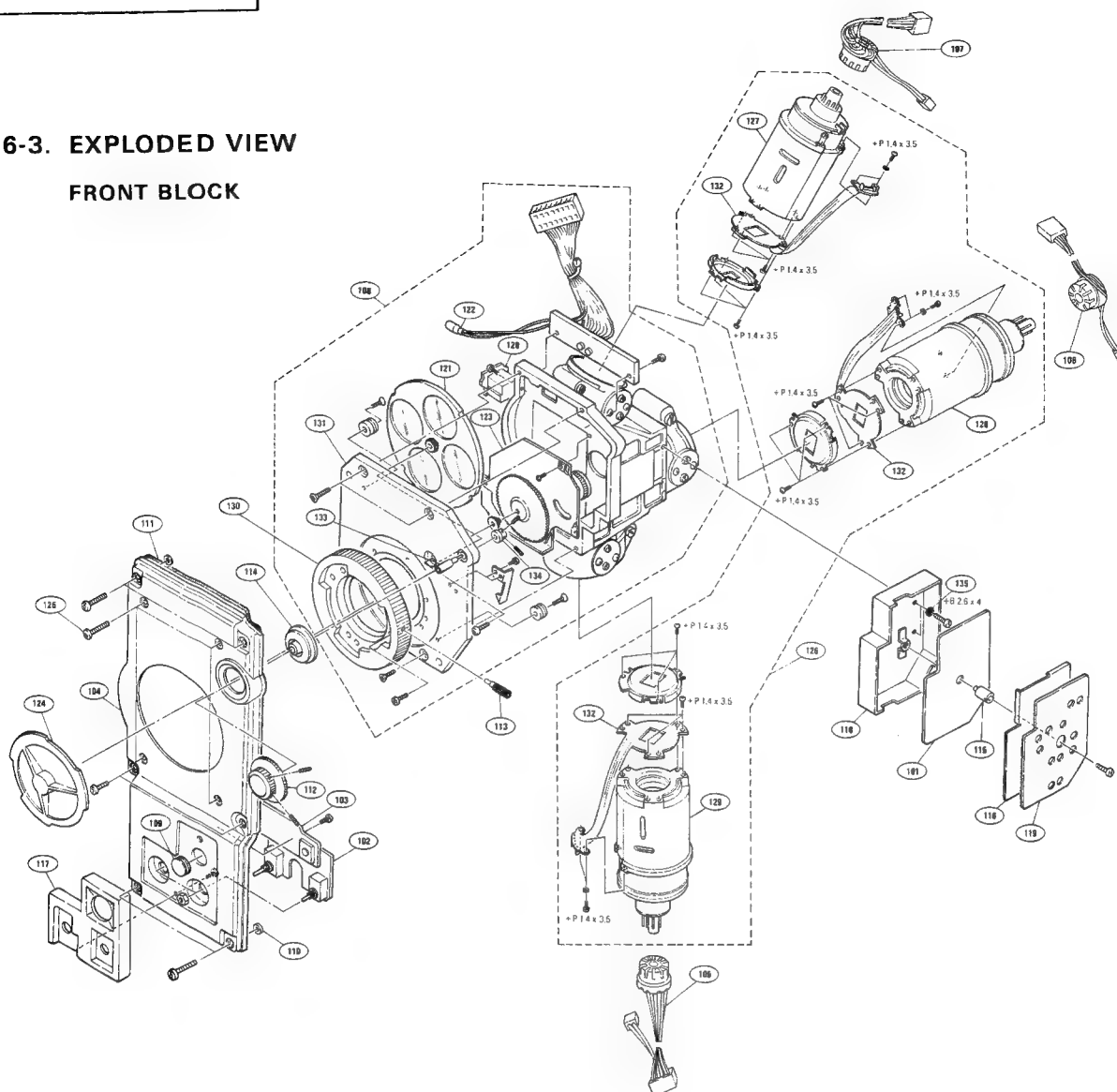
<b>RV101</b>	<b>1-226-735-00</b>	<b>CARBON 2K "CONTR"</b>
<b>RV102</b>	<b>1-226-736-00</b>	<b>CARBON 250K "BRIGHT"</b>
<b>RV103</b>	<b>1-230-489-11</b>	<b>CARBON 20K "AUDIO"</b>

**S102** 1-554-924-11 TOGGLE "AUDIO/FILTER"

# FRONT BLOCK

## 6-3. EXPLODED VIEW

### FRONT BLOCK



No.	Parts No.	Description
101	A-7513-057-A	MOUNTED CIRCUIT BOARD "PA-37"
102	A-7520-131-A	MOUNTED CIRCUIT BOARD "SW-77"
103	A-7520-132-A	MOUNTED CIRCUIT BOARD "SW-79"
104	X-3678-608-4	PANEL ASSY. FRONT
105	1-934-743-11	PICKUP TUBE SOCKET WITH HARNESS (R)
106	1-934-744-11	PICKUP TUBE SOCKET WITH HARNESS (G)
107	1-934-745-11	PICKUP TUBE SOCKET WITH HARNESS (B)
108	1-547-133-12	OPTICAL BLOCK (PY-08)
109	3-672-221-00	PACKING, CONTROL
110	3-672-251-00	RING (M4), O
111	3-672-253-11	RUBBER, CONDUCTIVE
112	3-678-602-00	KNOB, FILTER
113	3-678-629-00	LEVER, MOUNT
114	3-678-632-00	PACKING, KNOB
115	3-678-680-00	SCREW, PA
116	3-678-682-00	LID, SHIELD, PA
117	3-680-567-01	GUARD, SWITCH
118	3-678-689-00	CASE, SHIELD, PA
119	3-678-690-02	LABEL, PA BOARD

No.	Parts No.	Description
120	3-706-975-01	HOUSING, BIAS LIGHT
121	3-706-758-00	DISC, FILTER
122	3-706-759-00	LAMP, BIAS LIGHT
123	3-706-760-00	SHUTTER
124	3-706-761-00	CAP
125	4-882-768-02	SCREW, BUTTON HEAD (M4 x 8)
126	OPTIONAL PART: PICKUP TUBE KIT (RGB) RKP3457X	
127	OPTIONAL PART: PICKUP TUBE (B) RKP3457B	
128	OPTIONAL PART: PICKUP TUBE (G) RKP3457G	
129	OPTIONAL PART: PICKUP TUBE (R) RKP3457R	
130	3-707-031-01	RING, MOUNT
131	3-707-187-01	FRONT PANEL
132	A-7512-058-A	MOUNTED CIRCUIT BOARD "PP-13"
133	3-707-274-01	SHAFT
134	3-707-275-01	GEAR, FLAT
135	7-623-421-07	LW2.6, TYPE B

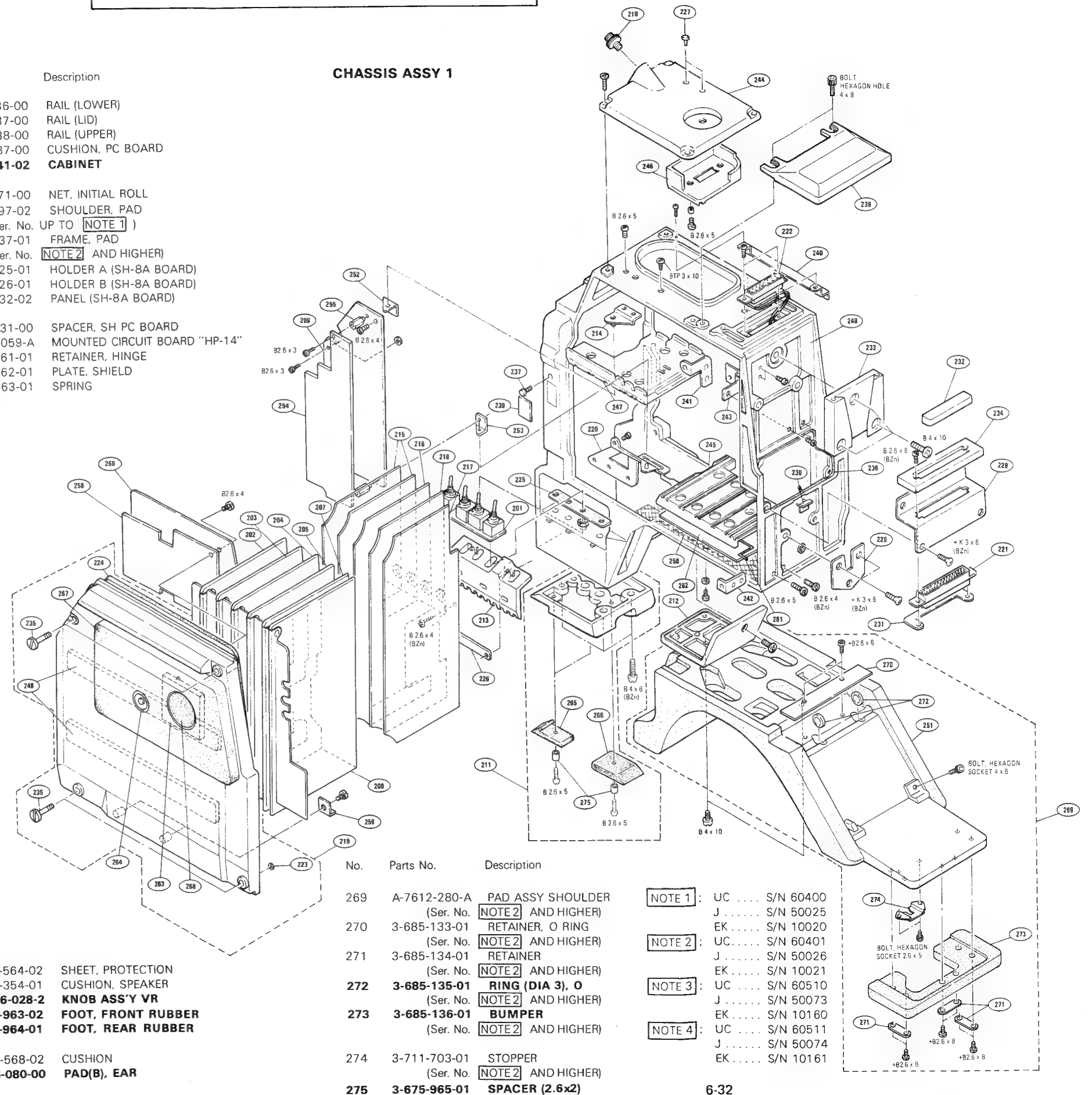
## CHASSIS ASSY

## CHASSIS ASSY

No.	Parts No.	Description
201	A-751 1-886-A	MOUNTED CIRCUIT BOARD "SW-7B"
202	A-751 3-053-A	MOUNTED CIRCUIT BOARD "VA-23"
203	A-751 3-054-A	MOUNTED CIRCUIT BOARD "DF-23"
204	A-751 1-889-B	MOUNTED CIRCUIT BOARD "IE-6"
		(FOR NTSC)
	A-751 1-911-B	MOUNTED CIRCUIT BOARD "IE-6P"
		(FOR PAL)
205	A-751 3-356-A	MOUNTED CIRCUIT BOARD "PR-75"
207	A-751 3-068-A	MOUNTED CIRCUIT BOARD "EN-33"
		(FOR NTSC)
	A-751 3-070-A	MOUNTED CIRCUIT BOARD "EN-33A"
		(FOR PAL)
<b>208</b>	<b>A-751 3-055-A</b>	<b>MOUNTED CIRCUIT BOARD "PS-41"</b>
209	A-751 3-064-A	MOUNTED CIRCUIT BOARD "SH-8A"
210	X-367 2-208-2	SUSPENSION ASS'Y (B)
<b>211</b>	<b>X-367 5-905-0</b>	<b>SHOE, ASS'Y</b>
212	X-367 8-601-2	LID (R) ASS'Y
213	X-367 8-602-0	PLATE ASS'Y, CONTROL
		(Ser. No. UP TO <b>NOTE 3</b> )
	X-367 8-602-2	PLATE ASS'Y, CONTROL
		(Ser. No. <b>NOTE 4</b> AND HIGHER)
214	X-367 8-603-0	BRACKET, (A) ASS'Y
215	X-367 8-604-0	PLATE ASS'Y, SHIELD, IE
216	X-367 8-605-0	PLATE ASS'Y, SHIELD, PR
217	X-367 8-606-0	PLATE ASS'Y, SHIELD, PW
218	X-367 8-607-0	PLATE ASS'Y, SHIELD, EN
219	X-367 8-609-6	PLATE (RIGHT) ASS'Y, SIDE
220	X-367 8-612-0	BRACKET, (B) ASS'Y
<b>221</b>	<b>1-562-112-21</b>	<b>RECEPTACLE 50P MALE</b>
<b>222</b>	<b>1-934-795-11</b>	<b>15 PIN CONNECTOR WITH HARNESS (CN102)</b>
<b>223</b>	<b>3-672-251-00</b>	<b>RING (M4), O</b>
224	3-672-253-11	RUBBER, CONDUCTIVE
225	3-672-254-00	SHEET, BRIND
226	3-672-266-00	NUT PLATE
<b>227</b>	<b>3-673-018-00</b>	<b>SCREW, BLIND</b>
228	3-675-902-00	BRACKET (A), CONNECTOR
229	3-675-924-00	STOPPER
230	3-675-927-00	PROTECTOR
231	3-675-929-00	NUT (50P), PLATE
<b>232</b>	<b>3-675-930-00</b>	<b>CAP (50P PIN SIDE), DUST</b>
233	3-675-958-02	SHOE, C
234	3-675-976-00	CUSHION
<b>235</b>	<b>3-676-089-32</b>	<b>SCREW, LID</b>
<b>236</b>	<b>3-676-339-11</b>	<b>RUBBER</b>
<b>237</b>	<b>3-676-379-00</b>	<b>BUSHING (M5) SCREW</b>
238	3-685-128-02	COVER (2), CONNECTOR
239	3-678-607-00	LABEL, FILTER
240	3-678-608-02	BRACKET (A), PC BOARD
241	3-678-611-00	BRACKET (C)
242	3-678-612-00	BRACKET (D)
243	3-678-630-00	REINFORCEMENT (A), HN
244	3-678-633-03	COVER, TOP

No.	Parts No.	Description
245	3-678-636-00	RAIL (LOWER)
246	3-678-637-00	RAIL (LID)
247	3-678-638-00	RAIL (UPPER)
248	3-678-687-00	CUSHION, PC BOARD
<b>249</b>	<b>3-678-641-02</b>	<b>CABINET</b>
250	3-678-671-00	NET, INITIAL ROLL
251	3-678-697-02	SHOULDER, PAD
		(Ser. No. UP TO <b>NOTE 1</b> )
	3-685-137-01	FRAME, PAD
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
252	3-678-625-01	HOLDER A (SH-8A BOARD)
253	3-678-626-01	HOLDER B (SH-8A BOARD)
254	3-680-532-02	PANEL (SH-8A BOARD)
255	3-680-531-00	SPACER, SH PC BOARD
258	A-751 3-059-A	MOUNTED CIRCUIT BOARD "HP-14"
259	3-680-561-01	RETAINER, HINGE
260	3-680-562-01	PLATE, SHIELD
261	3-680-563-01	SPRING
262	3-680-564-02	SHEET, PROTECTION
263	3-676-354-01	CUSHION, SPEAKER
<b>264</b>	<b>X-367 6-028-2</b>	<b>KNOB ASS'Y VR</b>
<b>265</b>	<b>3-675-963-02</b>	<b>FOOT, FRONT RUBBER</b>
<b>266</b>	<b>3-675-964-01</b>	<b>FOOT, REAR RUBBER</b>
267	3-680-568-02	CUSHION
<b>268</b>	<b>3-676-080-00</b>	<b>PAD(B), EAR</b>

## CHASSIS ASSY 1

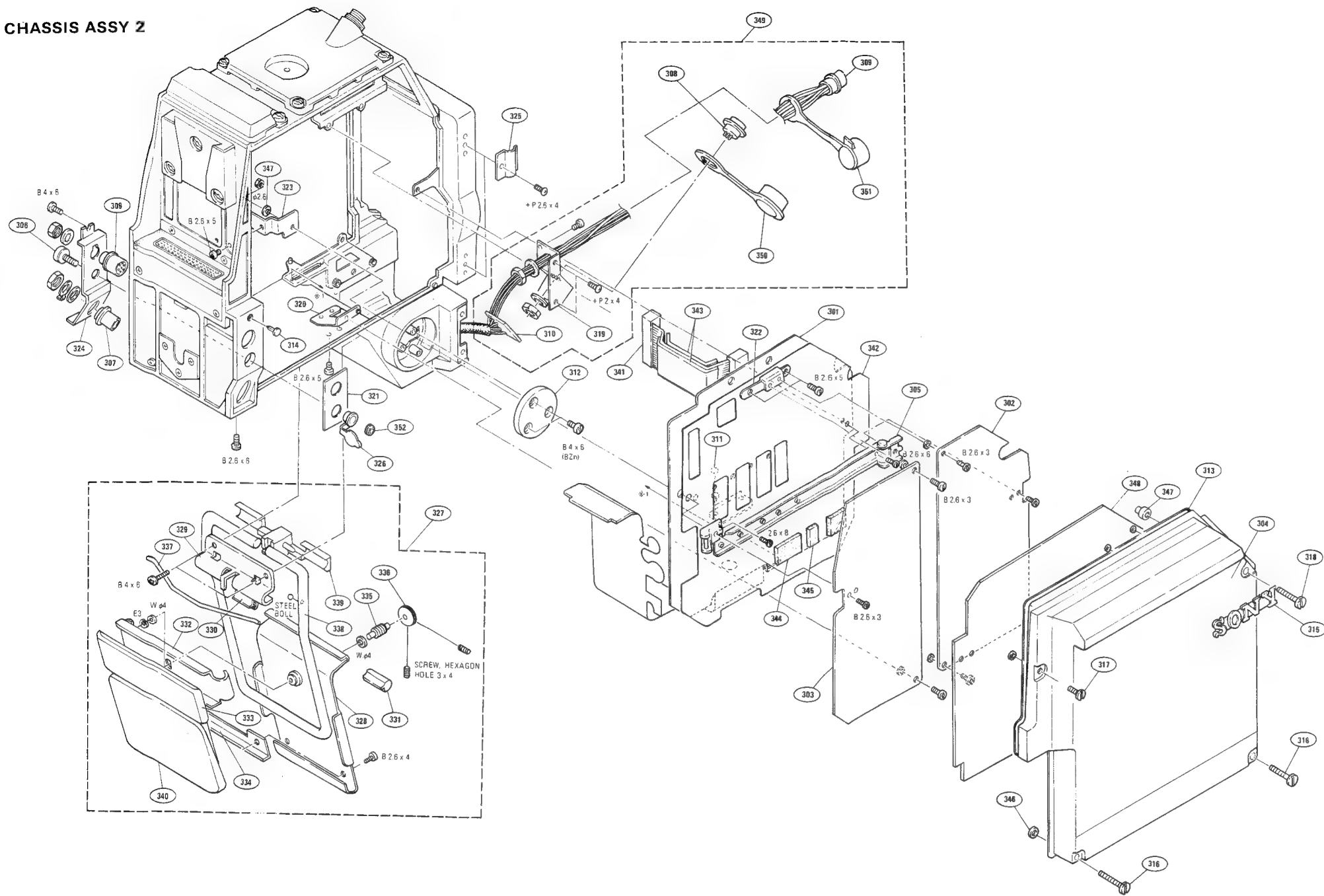


No.	Parts No.	Description
269	A-7612-280-A	PAD ASSY SHOULDER
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
270	3-685-133-01	RETAINER, O RING
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
271	3-685-134-01	RETAINER
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
<b>272</b>	<b>3-685-135-01</b>	<b>RING (DIA 3), O</b>
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
<b>273</b>	<b>3-685-136-01</b>	<b>BUMPER</b>
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
274	3-711-703-01	STOPPER
		(Ser. No. <b>NOTE 2</b> AND HIGHER)
<b>275</b>	<b>3-675-965-01</b>	<b>SPACER (2.6x2)</b>

<b>NOTE 1:</b>	UC	S/N 60400
	J	S/N 50025
	EK	S/N 10020
<b>NOTE 2:</b>	UC	S/N 60401
	J	S/N 50026
	EK	S/N 10021
<b>NOTE 3:</b>	UC	S/N 60510
	J	S/N 50073
	EK	S/N 10160
<b>NOTE 4:</b>	UC	S/N 60511
	J	S/N 50074
	EK	S/N 10161

CHASSIS ASSY CHASSIS ASSY

CHASSIS ASSY 2



- 350 3-678-769-00 CAP  
(UC ... S/N 20281 AND HIGHER)  
(J ... S/N 10161 AND HIGHER)  
351 3-685-115-01 CAP (6P), DROP PROTECTION  
(UC ... S/N 20281 AND HIGHER)  
(J ... S/N 10161 AND HIGHER)  
352 4-866-017-01 NUT, LOCK

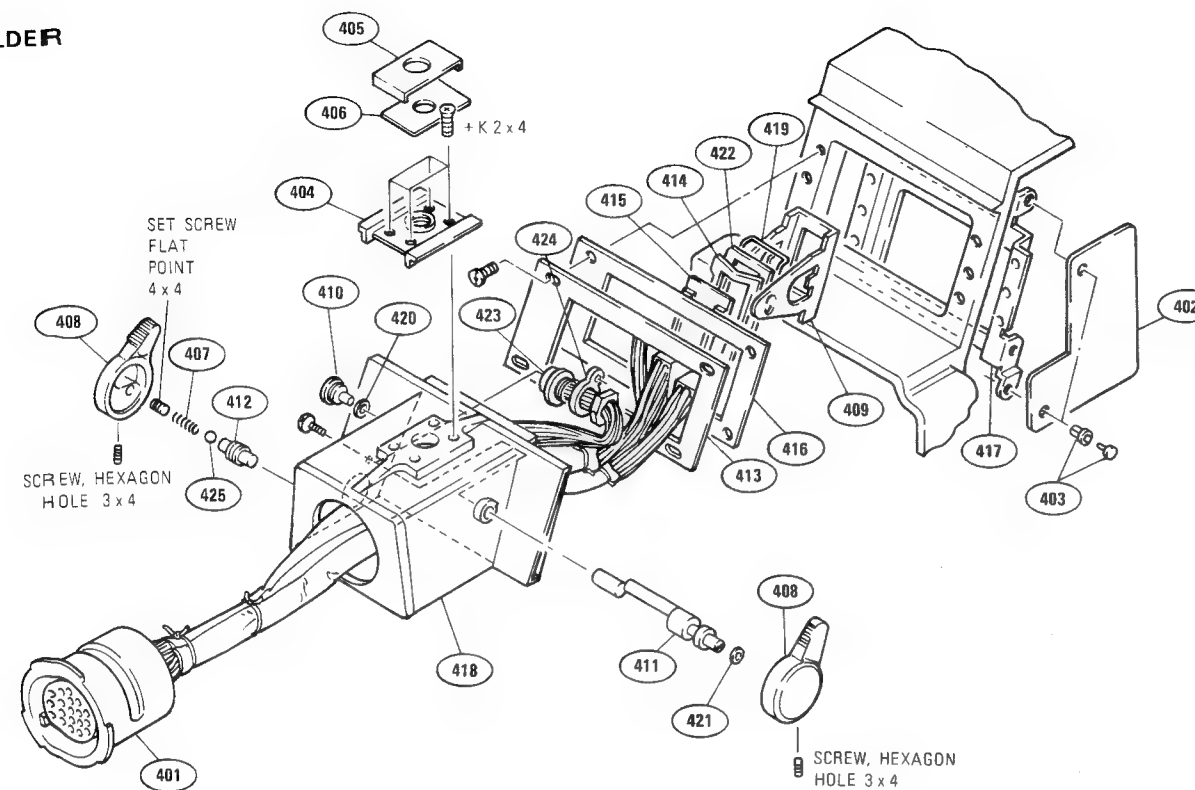
- 340 3-680-520-02 PAD (A)  
341 1-556-764-00 50P PLUG WITH HARNESS (SH)  
342 1-609-560-14 SHIELD SHEET, HN-25  
343 1-609-999-00 SHIELD SHEET, HN-27  
344 3-680-522-00 CUSHION, SH BOARD  
345 4-871-307-00 RUBBER (B)  
346 3-672-251-00 RING (M4), O  
347 3-680-529-00 BUSHING, INSULATING  
348 3-680-569-01 SHEET, INSULATING  
349 1-933-829-13 CONNECTOR ASSY WITH CN-65 BOARD "LENS"

No.	Parts No.	Description
301	A-7513-056-A	MOUNTED CIRCUIT BOARD "HN-308"
302	A-7513-046-A	MOUNTED CIRCUIT BOARD "AT-16"
303	A-7511-895-B	MOUNTED CIRCUIT BOARD "SG-63" (FOR NTSC)
	A-7511-913-B	MOUNTED CIRCUIT BOARD "SG-63A" (FOR PAL)
304	X-3678-610-5	PLATE (LEFT) ASS'Y, SIDE
305	X-3678-611-0	REINFORCEMENT (B) ASS'Y, HN
306	1-228-450-00	WIREWOUND 10K "PEDESTAL" RV1
307	1-561-781-21	RECEPTACLE, BNC "TEST OUT" CN14
308	1-562-221-00	RECEPTACLE, 12P FEMALE, "LENS" CN1
309	1-562-222-00	RECEPTACLE, 8P FEMALE, "LENS" CN103
310	1-608-897-13	PRINTED CIRCUIT BOARD "CN-65" (UC ... S/N UP TO 20280) (J ... S/N UP TO 10160)
	1-608-897-14	PRINTED CIRCUIT BOARD "CN-65" (UC ... S/N 20281 AND HIGHER) (J ... S/N 10161 AND HIGHER)
311	3-531-576-01	RIVET
312	3-672-233-00	COVER
313	3-672-253-11	RUBBER, CONDUCTIVE
314	3-673-018-00	SCREW, BLIND
315	3-675-901-00	ENBLEM, SONY
316	3-676-089-13	SCREW, LID (L 22.5)
317	3-676-089-22	SCREW, LID (L 11)
318	3-676-089-51	SCREW, LID (L 26)
319	3-678-603-00	PLATE (LENS), CONNECTOR (UC ... S/N UP TO 20280) (J ... S/N UP TO 10160)
	3-678-603-03	PLATE (LENS), CONNECTOR (UC ... S/N 20281 AND HIGHER) (J ... S/N 10161 AND HIGHER)
320	3-678-604-00	BRACKET (B), PC BOARD
321	3-678-606-00	LABEL, CONNECTOR
322	3-678-609-00	BRACKET (C), PC BOARD
323	3-678-630-00	REINFORCEMENT (A), HN
324	3-678-683-00	PLATE, CONNECTOR (BNC)
325	3-678-684-00	HOLDER, CABLE
326	3-678-685-00	COVER
327	A-7612-207-A	PAD ASSY
328	X-3678-615-0	SUPPORT ASSY, PAD
329	3-680-507-00	BRACKET (A), STAY
330	3-680-508-00	PAD (A) STOPPER
331	3-680-509-00	PAD (B), STOPPER
332	3-680-510-00	BRACKET, STAY
333	3-680-511-02	PAD(B)
334	3-680-512-00	CLAMP, STAY
335	3-680-515-00	SCREW, STAY ADJUST
336	3-680-516-00	KNOB, ADJUST
337	3-680-517-00	SPRING
338	3-680-518-00	STAY, PAD
339	3-680-519-00	SUPPORT, STAY

## VF HOLDER

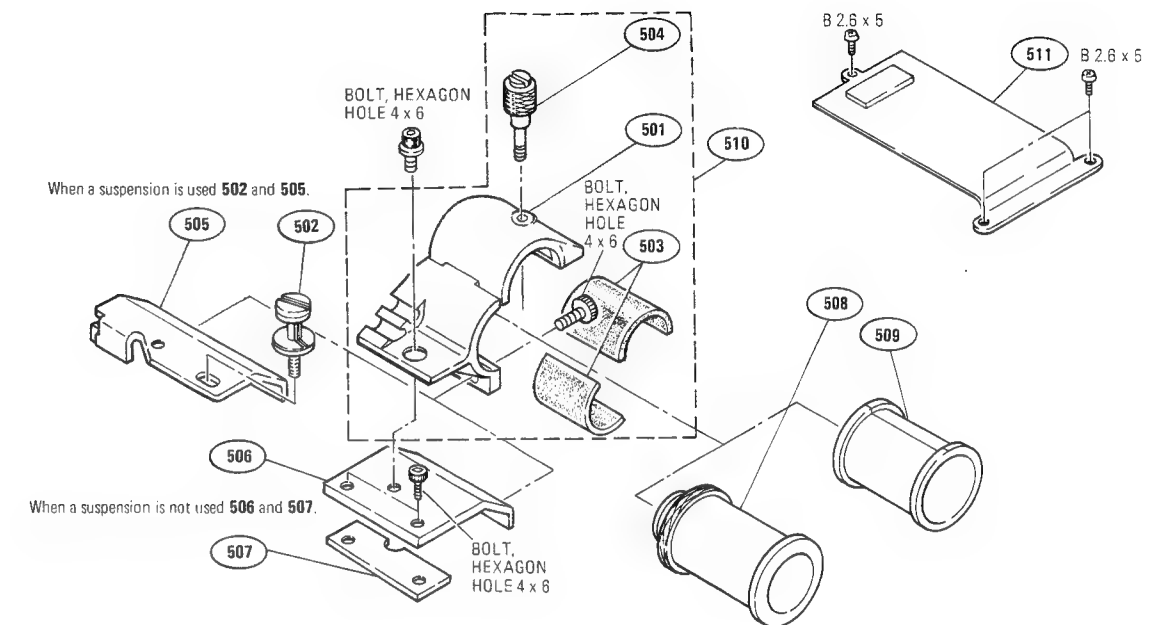
## MIC HOLDER

## VF HOLDER



No.	Parts No.	Description	No.	Parts No.	Description
401	1-561-812-00 1-934-868-11	CONNECTOR, 20P FEMALE (CN101) VF 20P CONNECTOR WITH HARNNES (CN101)	416	3-678-656-00	PLATE, ORNAMENTAL, SLIDE BLOCK
402	A-7520-172-A	MOUNTED CIRCUIT BOARD "CN-9"	417	3-678-657-00	BRACKET (E)
403	3-531-576-00	RIVET	418	3-678-658-05	HOLDER, VF
404	3-657-700-00	BRACKET, ACCESSORY	419	3-678-670-00	SPRING
405	2-277-468-01	PLATE, ORNAMENTAL, CAMERA	420	3-701-443-11	WASHER
406	3-672-213-00	SHEET, ADHESIVE	421	3-701-444-21	WASHER, 6
407	3-672-260-00	SPRING, COMPRESSION	422	3-680-521-00	SPACER, (C)
408	3-673-046-11	LEVER, LOCK	423	1-562-221-21	RECEPTACLE, 12P FEMALE (CN104)
409	3-678-646-00	CLAMP	424	3-680-560-01	BRACKET, CONNECTOR
410	3-680-566-01	SCREW (A), CLAMP	425	7-671-113-11	BALL, STEEL 3.5
411	3-678-649-02	SHAFT, CLAMP			
412	3-678-650-00	SCREW (B), STOPPER			
413	3-678-651-00	BASE, SLIDE			
414	3-678-654-00	SUPPORT, SLIDE			
415	3-678-655-00	SPACER (B), SLIDE			

## MIC HOLDER



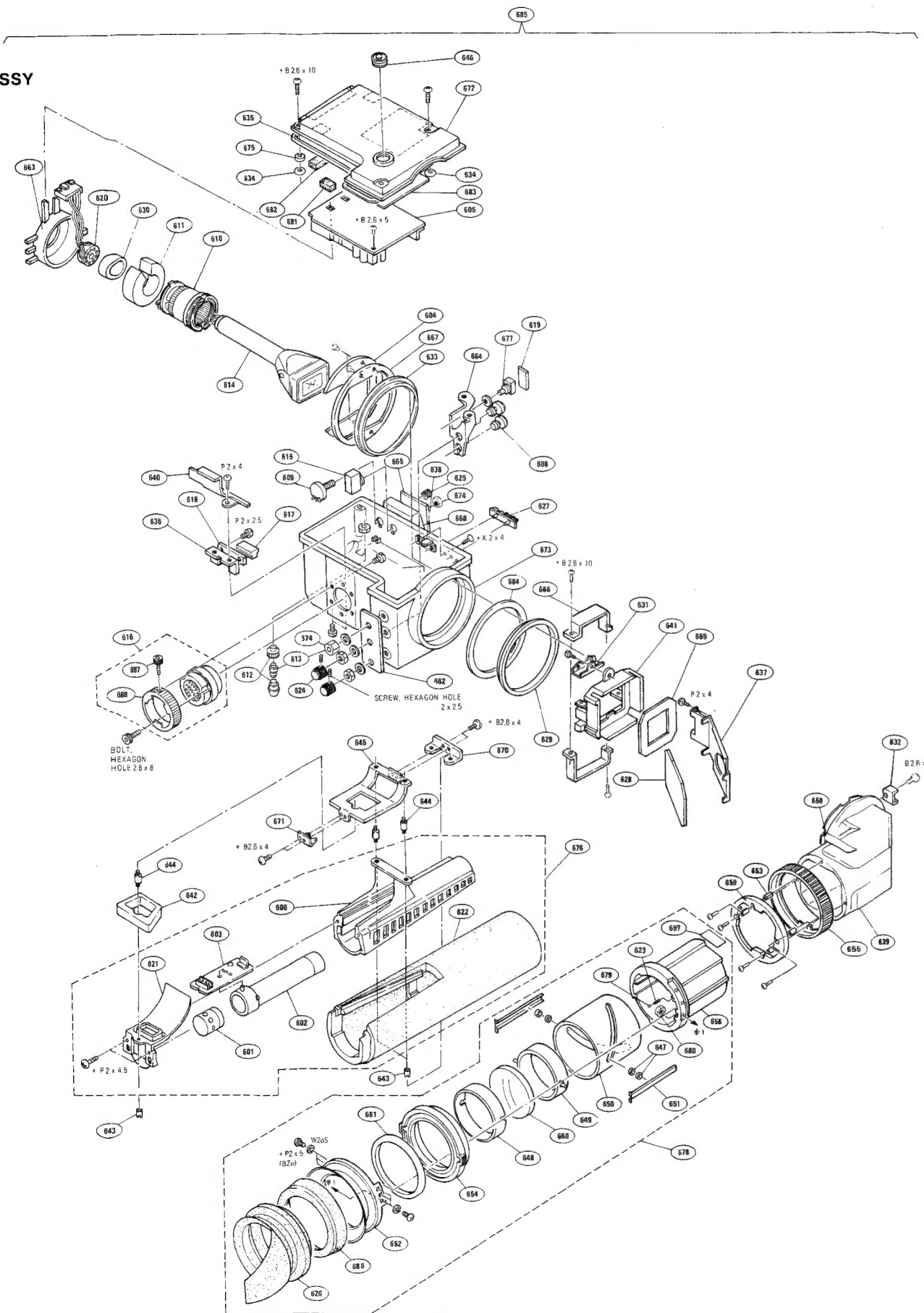
No.	Parts No.	Description
501	X-3664-502-3	HOLDER ASSY, MICROPHONE
502	X-3672-208-2	SUSPENSION ASSY (B) (FOR BVW-30/30P)
503	3-657-643-04	CUSHION, MICROPHONE
504	3-657-657-00	SCREW (M5)
505	3-680-578-01	PLATE (A), HOLDER, MICROPHONE (BVW-30/30P)
506	3-680-579-01	PLATE (B), HOLDER, MICROPHONE (BVP-30/30P)
507	3-680-580-01	SPACER SPACER (FOR BVP-30/30P)
508	3-680-581-01	HOLDER (A), MICROPHONE (FOR CRS-3P GRADE SUSPENSION)
509	3-680-582-01	HOLDER (B), MICROPHONE (FOR $\phi$ 19 MICROPHONE)
510	A-7401-113-B	HOLDER ASSY, MICROPHONE
511	3-680-577-01	COVER, MICROPHONE BLOCK



## VF ASSY

## VF ASSY

## VF ASSY



6-37

No.	Parts No.	Description
601	A-4511-007-A	UNIT ASSY
602	A-4511-008-A	TUBE ASSY PHASE
603	A-4518-180-A	MOUNTED CIRCUIT BOARD "MIC AMP"
604	A-7513-066-A	MOUNTED CIRCUIT BOARD "LP-28"
605	A-7513-067-A	MOUNTED CIRCUIT BOARD "VF-22"
606	X-2532-701-0	CASE ASSY
607	1-226-735-00	CARBON 2K (RV101)
608	1-226-736-00	CARBON 250K (RV102)
609	1-230-489-11	CARBON 20K (RV103)
610	1-451-208-21	DEFLECTION YOKE
611	1-464-168-22	MULTIPLIER
612	1-517-077-00	HOLDER, LAMP
613	1-518-337-00	LAMP, TALLY
614	1-546-043-11	PICTURE TUBE 1 1/2-INCH 40LB4
615	1-554-924-11	SWITCH, TOGGLE (S102)
616	1-560-704-00	RECEPTACLE, 20P MALE (CN103)
617	1-561-816-00	RECEPTACLE, 6P FEMALE (CN1)
618	1-606-127-00	PRINTED CIRCUIT BOARD "MC-19"
619	1-612-778-11	PRINTED CIRCUIT BOARD "SW-80"
620	1-934-936-11	SOCKET, PICTURE TUBE WITH HARNESS
621	2-532-711-00	REAR, COVER MICROPHONE
622	2-532-712-00	WINDSCREEN
623	3-302-492-00	SPRING, COMPRESSION
624	3-657-627-00	KNOB(2)
625	3-657-627-11	KNOB(2)
626	3-657-771-02	EYE CUP(2)
627	3-668-914-00	EMBLEM, SONY
628	3-672-201-00	MIRROR
629	3-672-241-00	RING(B), SLEEVE
630	3-672-244-00	SPACER, MULTI
631	3-685-129-01	SPRING(N), LEAF, VF
632	3-672-246-00	STOPPER
633	3-672-247-00	RING(A), SLEEVE
634	3-672-250-00	RING(M2.6), O
635	3-672-253-11	RUBBER, CONDUCTIVE
636	3-672-283-00	BRACKET, MICROPHONE CHASSIS
637	3-672-287-00	HOLDER, MIRROR
638	3-672-288-00	BRACKET(B)
639	3-672-294-12	TUBE, VF
640	3-673-028-00	PLATE, VF SHIELD
641	3-680-599-03	SUPPORT(C), CRT
642	3-675-985-00	CUSHION, MICROPHONE
643	3-675-986-00	SCREW
644	3-675-987-00	RUBBER, VIBRATION PROOF
645	3-675-999-00	RETAINER, MICROPHONE
646	3-676-244-00	COVER, SWITCH
647	3-678-659-00	ROLLER
648	3-678-660-00	SUPPORT(A), LENS
649	3-678-661-00	HOLDER(B), LENS
650	3-678-662-00	TUBE, SLEEVE

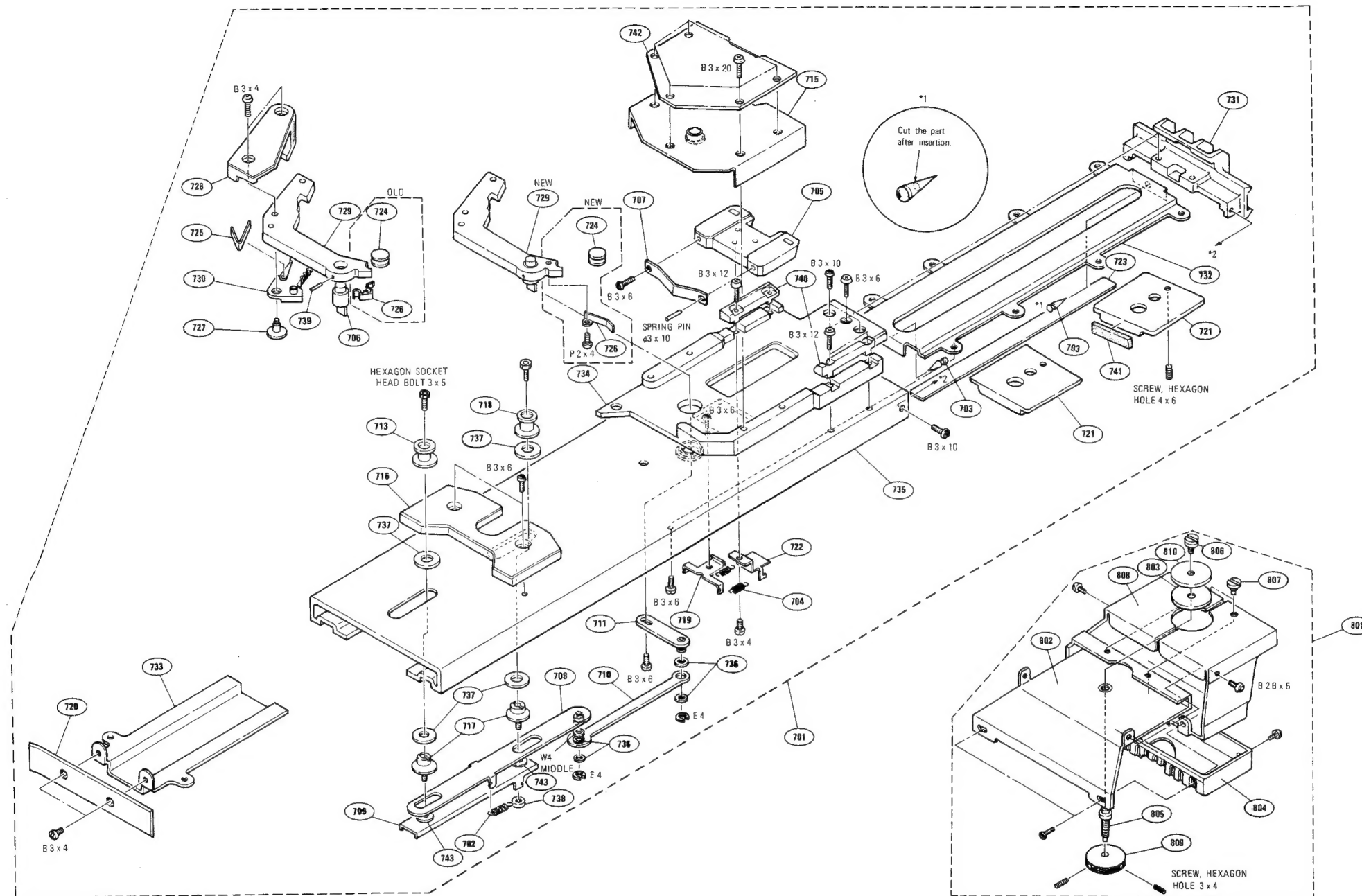
No.	Parts No.	Description
651	3-678-663-00	GUIDE, ROLLER
652	3-678-664-00	HOLDER, EYE CUP
653	3-657-841-11	SPACER (DIA 2X4)
654	3-678-667-02	RING, DIOPTR
655	3-685-119-01	RING, HOLD
656	3-678-669-00	HOLDER, DIOPTR RING
657	3-680-413-00	SEAL, RING HOLDER
658	3-680-414-00	SEAL, VF TUBE
659	3-680-416-00	RING, FIXED
660	3-680-417-00	LENS(B), VF
661	3-680-418-01	RING, O (RUBBER)
662	3-680-590-01	NAME PLATE(B) (CONTROL)
663	3-680-591-01	SUPPORT(B), CRT
664	3-680-592-01	BRACKET(A)(VF)
665	3-680-593-01	NAME PLATE(A)(CONTROL)
666	3-680-594-01	CLAMP, CRT
667	3-680-595-01	SUPPORT, ROTARY
668	3-680-596-01	GUARD, SWITCH
669	3-680-598-00	PLATE, DISPLAY
670	3-681-701-00	RETAINER(B), MICROPHONE
671	3-681-702-00	RETAINER(A), MICROPHONE
672	3-685-101-12	COVER, VF
673	3-685-102-03	VF(MAIN)
674	3-685-104-01	NUT, CONTROL
675	3-701-438-11	WASHER, 2.5
676	8-814-163-00	MICROPHONE C-2002A (WITH WINDSCREEN)
677	1-554-922-11	SWITCH, TOGGLE (S101)
678	A-7612-223-A	LENS ASSY, CONTACT
679	7-671-154-01	STENLESS BALL 2
680	7-622-205-05	NUT, M2 TYPE2
681	9-911-840-XX	RUBBER (B)
682	3-673-055-01	CUSHION
683	3-685-116-01	INSULATOR, VF
684	3-685-118-01	SPACER, RING
	(UC ... S/N 20281 TO 60250)	
	(J ... S/N 10161 TO 10210)	
685	A-7403-091-A	VF ASS'Y
686	3-713-129-01	PACKING, RING
	(UC ... S/N 60046 AND HIGHER)	
	(J ... S/N 50046 AND HIGHER)	
	(EK ... S/N 10056 AND HIGHER)	
687	9-991-751-01	SCREW, LOCK
688	9-991-752-01	RING, LOCK

6-38

BVP-30/AP

# TRIPOD ADAPTOR VTR BRACKET

# TRIPOD ADAPTOR VTR BRACKET



No.	Parts No.	Description
701	A-7408-015-F	ADAPTOR ASS'Y TRIPOD
702	3-648-211-00	SPRING, TENSION
703	3-644-002-00	CUSHION, HANDLE
704	3-492-235-XX	SPRING, TENSION
705	3-676-392-00	BRACE, SLIDE
706	3-676-393-00	SHAFT, ROTARY (UC ... S/N UP TO 60370) (J ... S/N UP TO 50005)
707	3-676-394-00	SPRING, LEAF
708	X-3676-101-1	PLATE (A) ASSY, SLIDE
709	X-3676-102-1	PLATE (B) ASSY, SLIDE
710	3-676-397-02	JOINT
711	X-3676-104-1	PLATE ASSY, LOTARY
713	3-678-701-00	PIN (B), VTR
715	X-3676-100-1	LID ASSY, UPPER
716	3-678-704-00	SPACER
717	3-678-705-00	SHAFT, VTR PIN RETAINER
718	3-678-706-00	PIN (A), VTR
719	3-678-707-00	PLATE (B), FIXED, SPRING
720	3-678-708-00	CAP
721	3-678-709-01	BRACE, FITTING
722	3-687-137-01	PLATE (A), FIXED, SPRING
723	3-678-711-02	SHEET, REAR PLATE
724	3-678-712-00	ROLLER (UC ... S/N UP TO 60115) (J ... S/N UP TO 10210)
725	3-678-713-00	SPRING (L), LEAF
726	3-678-714-00	SPRING (UC ... S/N UP TO 60115) (J ... S/N UP TO 10210)
727	3-678-715-00	PIN, TRIGGER
728	3-678-716-00	KNOB, LEVER
729	3-678-717-00	LEVER, CLAMP (UC ... S/N UP TO 60370) (J ... S/N UP TO 50005)
730	X-3678-636-1	LEVER ASSY, CLAMP (UC ... S/N 60371 AND HIGHER) (J ... S/N 50006 AND HIGHER)
731	3-678-719-00	BRACE, RETAINER
732	3-678-720-02	PLATE (A), REAR
733	3-678-721-02	PLATE (B), REAR
734	3-678-722-02	SPACER, T SHOE
735	X-3676-103-1	TABLE ASSY, ATTACHMENT

No.	Parts No.	Description
742	3-687-124-01	RETAINER (UC ... S/N 20251 AND HIGHER) (J ... S/N 10131 AND HIGHER)
743	3-701-446-11	WASHER, POLY 8MM DIA (0.25T)
801	A-7612-206-A	VTR BRACKET ASSY, TRIPOD
802	X-3678-614-0	COVER (B) ASSY, BRACKET
803	3-678-698-00	DISK
804	3-678-699-00	COVER (A), BRACKET
805	3-680-502-00	SCREW, BRACKET
806	3-680-503-00	SCREW, STOPPER
807	3-680-504-00	PIN, CLAMP
808	3-680-506-00	BRACKET (A)
809	3-680-516-00	KNOB, ADJUST
810	3-680-534-00	WASHER (6.1x20)

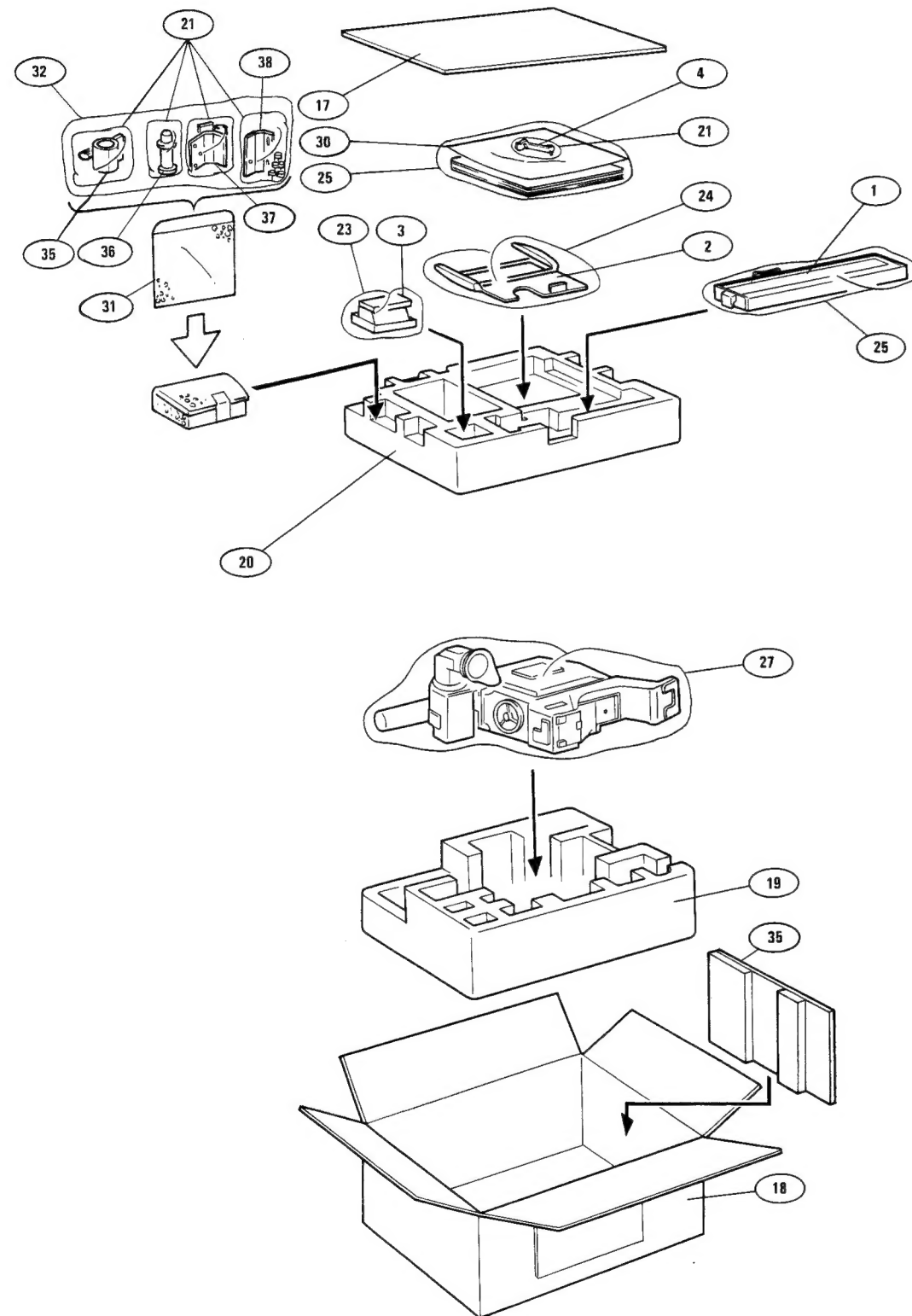
No.	Parts No.	Description
736	3-701-441-11	WASHER, 4
737	3-701-446-01	WASHER, POLY 8MM DIA (0.13T) (UC ... S/N 40001 AND HIGHER) (J ... S/N 10211 AND HIGHER)
739	3-703-357-56	PIN, PARALLEL (UC ... S/N UP TO 60370) (J ... S/N UP TO 50005)
740	3-678-783-00	GUIDE, T SHOE
741	3-687-123-01	CUSHION (UC ... S/N 20251 AND HIGHER) (J ... S/N 10131 AND HIGHER)

# PACKING MATERIAL

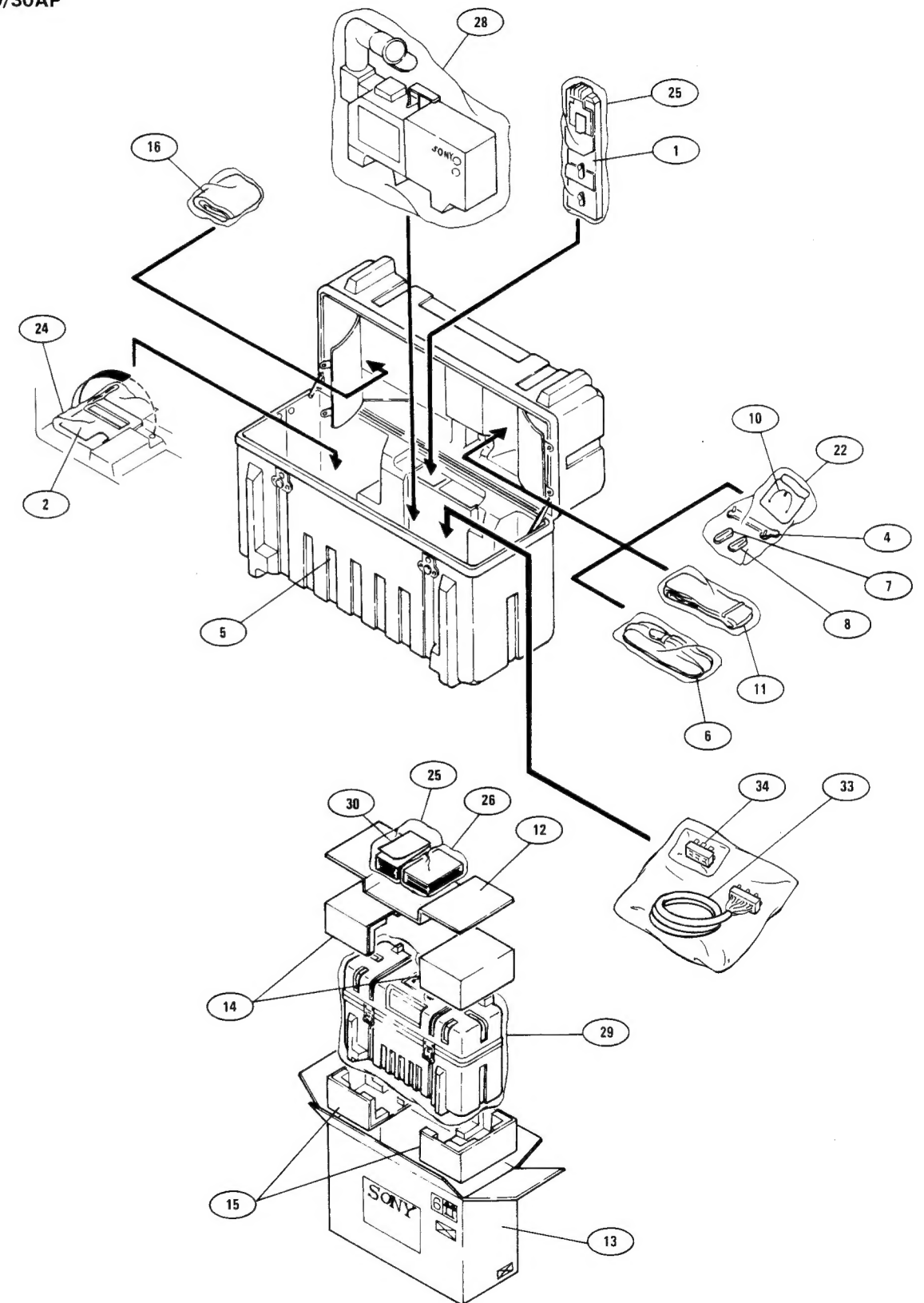
# PACKING MATERIAL

## 6-4. PACKING MATERIAL AND ACCESSORY (SUPPLIED) BVP-30/30AP

BVP-30/30AP



BVW-30/30AP



## PACKING, FIXTURE

No.	Parts No.	Description
<b>1</b>	<b>STANDARD PRODUCTS</b>	
		<b>TRIPOD ADAPTOR, VCT-12</b>
<b>2</b>	<b>A-7511-898-A</b>	<b>BOARD EXTENDER "EX-24"</b>
<b>3</b>	<b>A-7612-206-A</b>	<b>VTR BRACKET</b>
<b>4</b>	<b>X-3678-613-0</b>	<b>BOARD EXTRACTOR</b>
<b>5</b>	<b>X-3680-401-0</b>	<b>CARRYING CASE</b>
	<b>A-7408-023-A</b>	<b>LOCK ASSY</b> (without screw)
<b>6</b>	<b>3-685-111-01</b>	<b>STRAP (N), SHOULDER</b>
<b>7</b>	<b>3-676-269-00</b>	<b>CAP, DUST (FOR VTR 50P)</b>
<b>8</b>	<b>3-675-930-00</b>	<b>CAP, DUST (FOR CAMERA 50P)</b>
<b>10</b>	<b>3-676-372-00</b>	<b>STRAP, BATTERY LID</b>
<b>11</b>	<b>3-678-732-00</b>	<b>BELT, CARRYING CASE</b>
<b>12</b>	<b>3-680-408-00</b>	<b>BOARD, TOP</b>
<b>13</b>	<b>3-680-409-00</b>	<b>CARTON, INDIVIDUAL</b>
<b>14</b>	<b>3-680-410-00</b>	<b>CUSHION, UPPER 2PCS</b>
<b>15</b>	<b>3-680-411-00</b>	<b>CUSHION, LOWER 2PCS</b>
<b>16</b>	<b>3-680-412-02</b>	<b>COVER, RAIN</b>
<b>17</b>	<b>3-680-523-00</b>	<b>SPACER</b>
<b>18</b>	<b>3-680-524-02</b>	<b>CARTON, INDIVIDUAL</b>
<b>19</b>	<b>3-680-570-02</b>	<b>CUSHION, LOWER</b>
<b>20</b>	<b>3-680-571-02</b>	<b>CUSHION, UPPER</b>
<b>21</b>	<b>3-701-619-00</b>	<b>BAG, POLY (FOR BOARD EXTRACTOR)</b>
<b>22</b>	<b>3-701-621-00</b>	<b>BAG, POLY (FOR CAP, STRAP, EXTRACTOR)</b>
<b>23</b>	<b>3-701-622-00</b>	<b>BAG, POLY (FOR VTR BRACKET)</b>
<b>24</b>	<b>3-701-625-00</b>	<b>BAG, POLY (FOR BOARD EXTENDER)</b>
<b>25</b>	<b>3-701-632-00</b>	<b>BAG, POLY (FOR BVP-30/30AP OM MANUAL, TRIPOD ADAPTOR)</b>
<b>26</b>	<b>3-701-632-00</b>	<b>BAG, POLY (FOR BVV-1 OM MANUAL)</b>
<b>27</b>	<b>3-701-643-00</b>	<b>BAG, POLY (FOR BVP-30/30AP)</b>
<b>28</b>	<b>3-701-646-00</b>	<b>BAG, POLY (FOR BVW-30/30AP)</b>
<b>29</b>	<b>4-332-293-00</b>	<b>BAG, POLY (FOR CARRYING CASE)</b>
<b>30</b>	<b>3-680-660-00</b>	<b>AUTO CENTERING CHART</b>
<b>31</b>	<b>3-685-105-00</b>	<b>BAG, PROTECTION FOR HOLDER ASSY, MICROPHONE</b>
<b>32</b>	<b>HOLDER ASSY, MICROPHONE</b> (REFER TO EXPLODED VIEW PAGE No. 6-36)	
<b>33</b>	<b>1-557-660-11</b>	<b>6PIN TIME CODE CABLE</b>
<b>34</b>	<b>1-562-642-11</b>	<b>6PIN CONNECTOR FEMALE</b>
<b>35</b>	<b>3-713-136-01</b>	<b>PLATE, SIDE</b> (UC ... S/N 60426 AND HIGHER) (J ... S/N 50051 AND HIGHER) (EK ... S/N 10056 AND HIGHER)

### 6-5. FIXTURE

<b>A-7511-898-A</b>	<b>BOARD EXTENDER "EX-24"</b>
<b>X-3678-613-0</b>	<b>BOARD EXTRACTOR</b>
<b>J-6029-140-A</b>	<b>PATTERN BOX, PTB-500 (90 to 240Vac)</b>
<b>J-6029-140-2</b>	<b>DIFFUSION PLATE</b>
<b>J-6029-140-3</b>	<b>LAMP</b>
<b>J-6029-140-4</b>	<b>FILTER</b>
<b>J-6029-140-5</b>	<b>SWITCH, POWER</b>
<b>J-6029-140-6</b>	<b>SOCKET, LAMP</b>
<b>J-6026-100-A</b>	<b>RESOLUTION CHART</b>
<b>J-6026-130-A</b>	<b>GRAY SCALE CHART</b>
<b>J-6021-890-A</b>	<b>BALL PATTERN CHART</b>
<b>J-6026-120-A</b>	<b>REGISTRATION CHART</b>
<b>J-6026-110-A</b>	<b>MULTI BURST CHART</b>
<b>J-6196-080-A</b>	<b>DC POWER CORD (BW-608)</b>